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PART FIRST.

Original Communications.

ART. I.—*A Case of Spina Bifida successfully treated by repeated Punctures; with Practical Remarks.*—By ALEXANDER H. STEVENS, M.D., President of the College of Physicians and Surgeons, etc., etc. [With a Lithograph.]

No point of practice seems to have obtained a more settled conviction than that spina bifida is an incurable and generally fatal malconformation. More than thirty years since, Sir Astley Cooper published the history of a case which he succeeded in curing. It does not appear, however, that he ever was so fortunate in a second instance; and it is to be presumed that others, if not Sir Astley himself, have repeated the experiment in numerous instances without success. The following case of successful treatment of this distressing malady appears to be worthy of record. It is extracted from the note-book of Dr. John Watson:

Spina Bifida.—October 17th 1837. An infant, daughter of Mr. Leach, of Skeneateles, eight months old, was operated on by Dr. Stevens this morning for spina bifida. The tumor was seated over the upper part of the sacrum, about three and a-half inches broad from side to side, nearly the same in a vertical direction, and rising about two inches above the surrounding surface, indented along the middle vertically by a thick irregular band of integument. The covering of the tumor was not healthy skin, bu a peculiar thin membrane of a reddish color, traversed by numerous vessels like varicose capillary veins. The healthy integument formed a hard edge at its line of union with the covering of the tumor. The whole swelling was somewhat pendulous, narrower at its base than about the middle, and in size held about the same relation to the size of the infant, as it did at the time of birth. It had been once punctured with a needle, when the child was only a few weeks old. The wound, which had never cicatrized fairly, is now covered with a sort of scab.

In the operation to-day it was punctured with an iris knife, and about four ounces of clear serum tinged with a few drops of blood, issued from the puncture in the integuments. The child did not appear to suffer any inconvenience from the evacuation of serum, but it produced a slight sinking at the anterior fontanelle. The child's general health is good. There did not appear to be any deficiency of bone about the outer portion of the base of the tumor. The healthy integument mounted a few lines above the base, before giving place to the peculiar envelope above noticed.

October 20th.—The tumor was again tapped on the right side. Not more than an ounce of serum escaped.

October 21st.—The tumor was again punctured in three places along its lower edge on the verge of the sound skin. About four ounces of serum escaped without any bad symptoms. The tumor is now somewhat shrivelled, but the diminution does not appear equal to the amount of fluid evacuated.

October 30th.—The fluid continued to ooze slowly for nearly twenty-four hours after the last punctures. Since that period, the child has been drooping and fretful, with some febrile symptoms, perhaps partly owing to her teeth. Recently, the sac of the tumor has become inflamed; and within two days, the child has been observed to keep her left leg drawn up, and to cry when it is disturbed. She has taken little or no medicine, excepting a slight dose of magnesia. The tumor is kept wet with a spirit-lotion. The anterior fontanelle is considerably depressed.

The tumor was not punctured afterwards. The febrile symptoms and spasm of the muscles, soon subsided; and in a few days, the little patient returned with her parents to the country. At a second visit to the city in the spring, or summer following, the child was again presented to us for examination. The sac of water had disappeared, and all that remained of it, was a small bunch of indurated and corrugated integument.

The annexed drawings were taken by Dr. Westmacott, about two years after the operation, at which time the child was perfectly healthy.

I think it important to state, that the fluid in the sac was discharged very slowly; at the rate of about three drops in a second, while about one third of it was left behind; that slight pressure was made upon the tumor after each evacuation, and as far as was practicable in a restless child, maintained there; and that strict injunctions were given to keep the body in a horizontal position. Once, when the head was suddenly elevated, soon after the tumor had been evacuated, a tendency to syncope and spasm was manifested, which disappeared as soon as the child's head was depressed.

Remarks.—Considering the analogy between spina bifida and hydrocele of the tunica vaginalis testis, and other serous sacs, we may anticipate a thickening and induration of the sac, with a corresponding degree of contraction in the former case, as well as in the latter. The desideratum then is, to open the sac and draw off the fluid safely. This leads to the inquiry—What are the dangers of the operation?

The first danger is the producing of syncope and spasms, by the too sudden removal of the pressure of the fluid upon the serous cavities in the ventricles and spinal marrow. The means of obviating this danger are, drawing the water off slowly, leaving some in the sac undischarged,

keeping the patient in a horizontal position, and if necessary, making pressure upon the tumor and upon the head. With these precautions and resources, this danger cannot be deemed a formidable one.

The next danger of which I shall speak, is the occurrence of inflammation of the inner lining of the sac, extending peradventure to the spine and cerebral cavities. There was a period of two or three days of restlessness and feverishness in Mr. Leach's child, which I attributed to this cause, but which disappeared without any particular treatment. Of course, no prudent surgeon would repeat the puncture, until the effects of the previous operation had subsided.

The next question of which I shall speak, is of an entirely different kind, and I infer the possibility of it only from analogy, reasoning from what occurs in somecases of paracentesis abdominis; that is, an habitual increased secretion produced by repeatedly drawing off the water. I should judge, that such a state of things was to be obviated by increasing the degree of inflammation, and of course the thickening and contraction of the sac, after each puncture, by pressure sufficient for the purpose.

These considerations lead me to conclude, that the puncture of spina bifida may be made with very little danger and a fair prospect of success.

ART. II.—*Vital Statistics furnished by the Sixth Census of the United States, bearing upon the question of the Unity of the Human Race.* By the EDITOR.*

As the subjects discussed in the two articles quoted at the foot of the page, involve questions of the highest importance in anthropology, and as the deductions profess to be based upon statistical data, not to speak of the still more weighty circumstance that these *new views* have been introduced to the notice of the public under the auspices of two of the leading medical journals on this side of the Atlantic, it behoves every true lover of science to investigate most rigidly the character of the facts upon which they rest, before giving in his adhesion to doctrines which threaten to subvert what have been long regarded as established truths. We are sure that no one will be more rejoiced to see the questions here mooted, placed upon their legitimate ground, than these two able editors themselves. As we propose giving a somewhat extended examination to the subject, and as the article in the Boston Medical Journal seems to be the chief basis of the other, we deem it expedient to lay before our readers the whole of a "*Philanthropist's*" communication.

"*Vital Statistics of Negroes and Mulattoes.*—The physical welfare of mankind unquestionably claims the first attention of the philanthropist. This position is sustained by the fact, that the mind of man cannot have a sublunary

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* *Vital Statistics of Negroes and Mulattoes.* By PHILANTHROPIST. pp. 2. *Boston Medical and Surgical Journal*, for October 12th, 1842.

The Mulatto a Hybrid—probable Extermination of the two Races, if the Whites and Blacks are allowed to Intermarry. By J. C. NOTT, M.D. Mobile. pp. 4. *American Journal of Medical Sciences*, for July, 1843.

existence independent of the body; and that the intellectual character generally, and often wholly, depends upon the condition of the animal system.

"The prevention of a great proportion of the maladies, to which human beings are obnoxious, is no less an important consideration with the physiologist, than the cure of disease. Indeed, if all *possible* precautions were used as preventives, it is confidently believed there would be but little demand for remedies.

"As the energies of a very large proportion of your readers are almost exclusively devoted to the 'lengthening out of human life,' I am desirous of presenting to their consideration a few suggestions, relating to the natural history of a portion of the human race, which I trust will not be wholly uninteresting to them, and I am confident may, by their influence, be a subject from which the people of the United States, at least, will derive much assistance in deciding upon a question, which is now being agitated with intense interest through the whole length and breadth of our Union. From authentic statistics and extensive corroborating information, obtained from sources, to me of unquestionable authority, together with my own observation, I am led to believe that the following statements are substantially correct.

"1st. That the longevity of the pure Africans is greater than that of the inhabitants of any other portion of the globe.

"2d. That Mulattoes, *i. e.*, those born of parents one being African and the other Caucasian or white, are decidedly the shortest lived of any class of the human race.

"3d. That Mulattoes are no more liable to die under the age of 25, than the whites or blacks; but from 25 to 40, their deaths are as 10 to 1 of either the whites or blacks between those ages—from 40 to 55, 50 to 1—and from 55 to 70, 100 to 1.

"4th. That the mortality of the free people of color, in the United States, is more than 100 per cent. greater than that of the slaves.

"5th. That those of unmixed African extraction in the 'free States,' are not more liable to sickness or premature death than the whites of their rank and condition in society; but that the striking mortality, so manifest among the free people of color, is in every community and section of country invariably confined to the Mulattoes.

"As the above remarks relate exclusively to physical *effects*, their causes are deemed a fit subject for the investigation of the physiologist. That the causes of such momentous effects may be fully and satisfactorily ascertained, or a remedy or preventive successfully suggested, is the sincere desire of a

"PHILANTHROPIST.

"NOTES.—1. The late and much-lamented Dr. B., of this city, whose *opinion* in matters relating to natural history was esteemed very good authority by those best acquainted with him, and whose correctness in the statement of facts was never questioned, ascertained that it was not uncommon for African slaves in the West Indies to live to from 125 to 130 years of age—and frequently from 150 to 175; and that there had been several instances recorded where they had lived more than 200 years. Dr. B. was of the opinion that the lives even of these were shortened by change of country and condition.

"2. It was remarked by a gentleman eminent for his intellectual attainments, and distinguished for his correct observation, and who had lived many years in the southern States, that he did not believe he had ever seen a Mulatto 70 years of age.

"3. From a correspondence published in the 'Boston Statesman,' in April last, is taken the following statistics:—'In a population [colored] of 2,634,348 (including the free blacks) there are 1980 over 100 years of age; whereas there are but 647 whites over 100 years of age in a population of 14,581,000.' 'It so happens that we have before us a pamphlet published in 1827, by Dr. Niles, then a citizen of New York, now resident and well known in Paris, in which he gave a comparative statement of the mortality in the cities of Philadelphia, New York and Baltimore, deduced from the official reports of the boards of health of the respective cities, from which it appears that in the years 1823, 24, 25 and 26, the deaths were as follows:

	In New York.	In Philadelphia.	In Baltimore.
Whites	1 in 40.15	1 in 31.82†	1 in 44.29
Free Blacks	1 in 18.88	1 in 19.91†	1 in 32.2
Slaves*			1 in 77.88

"4. The same comparative morality between the Mulattoes and blacks exists in the West Indies and Guiana, where unfavorable social causes do not operate against the Mulattoes, as in the United States."

As it is an admirable rule in philosophizing, to determine the truth of a fact before we attempt to explain it or to draw from it any conclusion, let us here adopt this wise precaution.

The leading points of this paper are quoted by Dr. Nott with a strong manifestation of satisfaction; and he then adds—"*The statistics given by 'Philanthropist' prove that the Mulattoes are much shorter lived,*" etc. Looking upon this statement as a most important statistic announcement, we immediately obtained the number of the Boston Journal above quoted from; but what was our surprise on seeing that no statistics whatever are presented as regards this point! Indeed, the Boston writer would seem to have been either afraid or ashamed to affix his real signature. We would premise, by the way, that the following conclusion at which Dr. Nott arrives, is not, as will be satisfactorily shown in the sequel, sustained by any statistical data known to the world at large:

"I do believe *that at the present day the Anglo-Saxon and Negro races are, according to the common acceptation of the terms, distinct species, and that the offspring of the two is a Hybrid.*"

We regret much that a "Philanthropist" does not afford some clue by which to trace the sources of his "*authentic statistics and extensive corroborating information.*" As regards "the longevity of the pure Africans," his source is evidently the census of the United States for 1840; but this census makes no distinction between Negroes and Mulattoes, nor are we aware of any other authentic statistic records in this country, or any other, which will give us this highly desirable information. "In a population [colored]," he says, "of 2,634,348 (including the free blacks), there are 1980 over 100 years of age; whereas there are but 647 whites over 100 years of age in a population of 14,581,000."

Now this is certainly, at first view, a *formidable fact* in favor of the greater longevity of the African; but let us bear in mind that *figures* are not *facts*, and hence the necessity of ascertaining the correctness of the data represented by numerals. Having within a few days gone through the same calculations with the data afforded by the census of 1840, our results have proved not dissimilar to those just given. Having made the distinction of *slave-holding* and *non-slave-holding* States, we obtained the following ratios:—

Non-Slave-holding District.

Free white persons of 100 years and upward, 1 in	25,106
Free colored persons of 100 years and upward, 1 in	812
Slaves of 100 years and upward, 1 in	754

* In Boston, the number of deaths annually among the colored population is not far from 1 in 15. There are probably fewer of pure African descent among the colored population in Boston, than any other city in the United States.

† [The error of these results is pointed out by the Editor of the American Journal of the Medical Sciences. The former should be 42.3, and the latter 21.7.—Editor.]

Slave-holding District.

Free white persons of 100 years and upward, 1 in	11,184
Free colored persons of 100 years and upward, 1 in	480
Slaves of 100 years and upward, 1 in	1,873

So far the investigation of relative longevity between the Caucasian and Negro, would seem most decidedly in favor of the latter; but still, not forgetting that *figures are not facts*, let us extend our researches by testing the universality of these facts. Let us see whether the same law will hold good in a comparison at the age of fifty years and upward. Here, however, some difficulty is presented in consequence of the throwing together, in the census, of all the colored persons between the ages of fifty-five and one hundred, while the whites are estimated precisely at decennial intervals; but this want of uniformity does not prevent, as the mean between fifty and sixty can be easily ascertained, a close approximation to precise comparative results. The following are the results:—

Free white persons above	50	in *non-slave-holding* States,	1	in	11.5
" " "	60	" " "	1	"	15.5
" " "	50	in *slave-holding* States,	1	"	14.
" " "	60	" "	1	"	18.9
Free colored persons above	55	in *non-slave-holding* States,	1	"	14.2
" " "	55	in *slave-holding* States,	1	"	11.9
Slaves above	55	in *non-slave-holding* States,	1	"	8.2*
"	55	in *slave-holding* States,	1	"	24.4

Now, as the total number of *free white persons* in the United States is 14,189,705, and the total of those who have reached the age of fifty years and upward is 1,175,010, the ratio of individuals of this age, compared with the entire white population, is 1 in 12.2; and when we extend the same comparison to those of sixty years and upwards, the ratio is found to be 1 in 16 5 On the other hand, as the total number of colored persons in the United States, including the free and the slave, is 2,873,685, and the total of those who are fifty-five years old and upwards, is 131,269, the ratio of this class of individuals, compared with the entire colored population, is 1 in 21.9.†

Here, then, we have a truly legitimate comparison as regards the relative longevity of the Caucasian and African. The ratio of the former, who attain the age of fifty-five years and upward, taking the mean of the two results given above at the ages of fifty and sixty years and upward, is 1 in 14 3; while that of the colored race, including the slave and the free, is only 1 in 21.9.

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* The slaves in the non-slave-holding States can exhibit no fair ratio as regards their own longevity, from the circumstance that they are merely the remnants of the former slaves, who generally have become free through the operation of a prospective law; but this fact does not in any way vitiate the preciseness of the general results.

† The critical reader may here observe a slight discrepancy in our grand totals; thus the aggregate of the whites and the colored as here given, makes 17,063,390, while the grand aggregate of the United States, according to the Census of 1840, is 17,069,453 This difference is not, however, sufficient to vitiate the results in the least; besides, our time is limited, and the labor of going over all the calculations a second time is ten-fold greater, perhaps, than the mass of our readers could well imagine. We design, however, in a following number of this Journal, to present an extended view of the vital statistics of the United States, deduced from the Census of 1840, when all the results presented in detail will allow every one to draw his own conclusions.

We have thus not only disproved, but, in fact, reversed, the position of a "Philanthropist"—"*That the longevity of the pure Africans is greater than that of the inhabitants of any other portion of the globe.*" But, independent of this statistical result, we can adduce various arguments confirming the same conclusion.

This result, which shows that the longevity of the whites, in the United States, at the age of fifty-five and upward, (thus including the high ratio of the colored class at the age of one hundred and upward,) is fully fifty per cent. higher than that of those of African origin, excites in the mind, at once, a well-grounded suspicion that there must exist somewhere an error of vast magnitude relative to the high ratio of the colored race at one hundred years and upward. We will show that we have here an illustration of the fact, that of all kinds of reasoning, *arithmetical* is the most fallacious; for, not unfrequently, the error in the premises can be detected only by the absurdity of the results. It is not invariably true, that "*figures do not lie.*"

In the first place, there is good reason to doubt the correctness of the representations made by aged blacks relative to the period of their birth, for the simple reason that very few have any records of it. It is, indeed, obvious that Congress acted upon this belief, in directing all those between fifty-five and one hundred to be placed under a single head; while with the whites, the classification of decennial periods is continued up to one hundred. Moreover, the slave is led to exaggerate his real age, from the circumstance that it flatters his self-love, enhances his dignity, and excuses him from labor. It has been quaintly remarked that the negro never becomes a man, for until fifty-five or sixty years old, he is called a *boy*, and after that he is styled *uncle;* and in this latter state, his diguity and his ease depend on his years. The ratio, however, is equally high among the free coloured class. It may be here added, that while the slaves in the United States number 2,487,392, the total number of free colored persons is only 386,292.

Were it true that the Negro has a greater longevity than the white man, it would be in direct contradiction, assuming, of course, that the two races have the same physical organization, to some of the best established statistical results. Upon this point, we may repeat what we have said on a previous occasion:—

"One of the most interesting statistic views in reference to the natural history of man in health and disease in various countries, is that in which the influence of the progress of civilization is exhibited, by comparing the mortality with the population of the same country at intervals sufficiently long to admit of a decided social amelioration. Since 1650, all the countries of Europe, as well as the principal towns, present a gradual diminution of mortality. The value of life has doubled in London within the last century. As good bills of mortality have been kept at Geneva since 1560, we have conclusive statistical evidence that the probability of life to a citizen has gradually become five times greater. Similar evidence is afforded not only by the bills of mortality of many other cities, but especially by the British Insurance offices. This increased salubrity in many countries may, with good reason, be referred to the following causes:—The improved condition of the lower classes of society, as regards food, clothing, and fuel,—better habits as respects cleanliness, ventilation, and the use of spirituous liquors,—and improved medical practice, more especially in reference to the introduction of prophylactic means, as, for example, vaccination. In these circumstances may be found the exemption of Great Britain, for nearly two centuries, from those desolating epidemics which had appeared from time to time; and as there has been no recurrence of the plague

in London since 1665, which was the year preceding the great conflagration which destroyed those narrow streets in which it was practicable to shake hands from the attic windows of opposite sides, we may trace the cause in the improved system of medical police that followed.

"The time-honored opinion that poverty is conducive to longevity—that the rich are less favored by the blessings of health than the poor—finds no confirmation in statistical investigations. As moral and physical evil has a close relation, so also does misery bring in its train disease and death. It has been satisfactorily determined by M. Villerme, of Paris, that in periods of prosperity the ratio of mortality has decreased, and that of births has increased, while the mean duration of life has been augmented; and, on the contrary, when the people were suffering from any cause, opposite results were invariably witnessed."*

Hence also we find that among the free white population of the United States, compared with the degraded race occupying the same region, that the age of fifty-five and upward is reached by at least fifty per cent. more of the former than of the latter—a result confirmed by the statistical fact, that in New York, Philadelphia, Boston, and Baltimore, the annual ratio of mortality is twice as high among the blacks as among the whites. Now, it cannot be alleged that this high mortality among the colored persons in the non-slave-holding States, is due to the circumstance that they are mostly Mulattoes, inasmuch as we find, according to the census of 1840, that, among this same division of free colored persons, there are thirty-one individuals who reach the age of one hundred years and upward, compared with one white person who attains the same longevity. Here, then, we find Dr. Nott and a "Philanthropist" in the strange dilemma of attributing to the same class of individuals, both the greatest mortality and the greatest longevity!! For if, in order to account for this high mortality, they should suppose them to be Mulattoes, it follows necessarily that this race, of mixed origin, instead of being the most short-lived, as they allege, must have an extraordinary longevity. We have thus made good, we conceive, our declaration, that in *arithmetical* reasoning it not unfrequently happens that an error in the premises can be detected only by the unmitigated absurdity of the results.

As regards the *unity of the human race*—a doctrine which Dr. Nott and a "Philanthropist" aim to demolish—we furnished an article for the July number of the American Biblical Repository, in which we maintained the affirmative in an argument of fifty-two pages, especially in reference to the American Aboriginal. As our present limits will allow but a partial discussion of this question, we will be content to present a few extracts. We see no reason, notwithstanding the so-called statistics of the two writers before us, to change the opinion expressed in the following paragraphs:—

"As respects the *duration of human life*, it is evident that there exists no well-marked difference among the different families of men. As all nations have the tendency to exist for a given time,—the three-score-and-ten of the Hebrew being also allotted to our Indian,—they appear thus also as *one* species. The duration of human life, however, varies from the influence of external causes in different climates upon the animal economy; but, at the same time, individuals removed to a new climate acquire in successive generations a gradual physical adaptation

* The Climate of the United States and its Endemic Influences, p. 377.

to its local conditions. Thus the natives of the western coast of Africa and of the West Indies, notwithstanding the destructiveness of these climates to Europeans, sustain comparatively little inconvenience. As the cells of the camel's stomach show a wonderful adaptation of organic structure to local conditions, without being referred to climatic agency, so the system of the Negro, as his skin is a much more active organ of depuration than that of the white man, is better adapted, let the remote cause be what it may, to the warm, moist, and miasmial climates of the tropics.

"If the comparison as regards the duration of human life, however, is extended to the simiæ, notwithstanding their very close approximation to man in physical structure, the contrast is very great. As the greatest longevity of the troglodyte is no more than thirty years, we thus perceive, more especially when also we consider that all the monkey tribes, in their natural state, are confined almost wholly to the intertropical zone, the close relation of what are generally regarded as extreme diversities among the human races. As we discover no difference in this respect among the three races of the European, our Indian, and the Negro, there is little ground for introducing, as was done by Linnæus, Buffon, Helvetius, and Monboddo, the ourang-outang into the human family. Moreover, we find as attributes common to the three races just mentioned, the erect attitude, the two hands, the slow development of the body, and the exercise of reason. On the other hand, the whole structure of the monkey, who is four-handed, proves that to him the erect attitude is not natural. The striking characteristics of the predominance of the fore arm over the upper arm, and the great length of the upper and the shortness of the lower limbs, are peculiarly adapted to his climbing habits. How beautifully is the majestic attitude of man, which announces to all the other inhabitants of the globe his superiority, described in the words of Ovid:

> Pronaque cum spectent animalia cetera terram,
> Os homini sublime dedit; cælumque tueri
> Jussit; et erectos ad sidera tollere vultus.
>
> And while all other creatures to the dust
> Bend their low look, to man a front sublime
> He gave, and bade him ever scan the skies,
> And to the stars lift up his lofty gaze."

Let us now examine the conclusions to which Dr. Nott has been led by his individual observations. He makes, however, this candid admission—"I am well aware that my assertions would have much greater weight if they were supported by statistics." Indeed, the limited number of cases falling under the observation of a single individual cannot, in any way, justify a wide conclusion. It is only on the basis of the data given by large numbers, that the doctrine of averages can claim our attention. Hence statistics on a small scale is equivalent only to the merest chance; for the statistician, when confining himself to the limited run of events peculiar to his own observation, may just as readily fall upon singularities as upon facts approximating an average character. It is only under the circumstances just mentioned, when the peculiarities and coincidences, among a myriad of facts, have been reduced to their average proportions by the opposite

peculiarities and coincidences of another myriad of facts, that the application of numbers to the elucidation of the natural history of man in health and disease, is allowable; and then it constitutes in reality the mathematics of medical science.

The following are Dr. N.'s conclusions:

"1st. That the mulattoes are intermediate in intelligence between the whites and blacks.

"2d. That they are less capable of endurance and are shorter-lived than the whites or blacks.

"3d. That the mulatto women are particularly delicate—are subject to many chronic diseases, and especially derangement of the catemenia, prolapsus uteri, leucorrhœa, and other diseases peculiar to females.

"4th. That the women are bad breeders and bad nurses—many of them do not conceive at all—most are subject to abortions, and a large portion of their children die at an early age.

"5th. That the two sexes when they intermarry are less prolific, than when crossed on one of the parent stocks.

"6th. That the above facts apply with more force to the Terceroons and Quarteroons than to Mulattoes.

"7th. That during the severe epidemics of yellow fever in Mobile in the years 1837, '39, and '42, I did not see a single individual attacked with this disease, who was in the remotest degree allied to the negro race—I heard, however, of one or two cases in the practice of others."

Hence Dr. N. concludes "that the mulatto is a *hybrid;*" and "by this term," he says, "is understood the offspring of two distinct species."

We are of course under no obligation to contest these various conclusions, based upon the observation of a *single* individual; but in reference to the phenomena of hybridity, which have a close relation with the determination of species, we shall make a few more extracts from the article just referred to in the Biblical Repository:

"Species is defined by Buffon,—'A succession of similar individuals which re-produce each other.' By Cuvier,—'The union of individuals descended from each other, or from common parents, and of those who resemble them as much as they resemble each other.' He adds,—'The apparent difference of the races of our domestic species are stronger than those of any species of the same genus. . . . The fact of the *succession*, therefore, and of the *constant succession*, constitutes alone the *unity of the species*."

In further elucidation of the same point, we said—

"An identity of species between two animals, notwithstanding a striking difference in some particulars, has been inferred, as a general rule, if their offspring has been found capable of procreating. Although this doctrine has been generally maintained by our most distinguished naturalists, yet some have rejected it as a hasty generalization. The production of hybrids is a phenomenon observed not only among mammifers, but among birds, fishes, the insect tribes, and the vegetable kingdom; and when we survey the numerous facts opposed to the generally admitted law of nature that all hybrid productions are sterile, there would seem to be some ground for doubting the soundness of the general conclusion. Thus the dog and the wolf, and the dog and the fox, will breed together, and the mixed offspring is capable of procreat-

ing. And that mules are not always barren, is a fact not unknown even to Aristotle. But as hybrid productions are almost unknown among animals in their wild and unrestrained condition, it would seem that there is a mutual repugnance between those of different species; and thus nature guards against a universal confusion of the different departments of organized creation. Notwithstanding the occasional exceptions to the general fact of the sterility of hybrid productions, it has never been observed that an offspring similar to themselves has proceeded from hybrids of an opposite sex. The offspring of these animals is capable of being continued in successive generations only by returning toward one of the parent tribes. It is thus apparent that the *vis procreatrix* between different species, both in the animal and vegetable kingdoms, is very defective, and that the law of nature which maintains the diversity of tribes in the organized world, is not really infringed by the isolated phenomena observed in reference to hybrid productions. That animals generally have the same form and endowments now, as at the remotest period of our acquaintance with them, is an opinion confirmed by the oldest historical records, as well as by the works of art and the actual relics found in Egyptian tombs. The zoological descriptions of Aristotle, composed twenty-two centuries ago, are still faithful to nature in every particular. Hence it would appear that insurmountable barriers to the intermixture of species, at least among wild animals, have been provided by nature, in the instinctive aversion to union with other species, in the sterility of hybrid productions, and in the law of the reproduction of the corporeal and psychical character of the parent in the offspring.

"These facts have an important bearing upon the doctrine that mankind constitutes a single species. It is well known to horticulturists and those engaged in breeding domesticated animals, that, by crossing and intermixing varieties, a mixed breed superior in almost every physical quality to the parent races is often produced; and it has also been observed that the intermixture of different races of the human family has produced one physically superior, generally speaking, to either ancestral race. Now, as it is a law, according to the high authority of Buffon and Hunter, that those animals of opposite sexes, notwithstanding some striking differences in appearance, whose offspring is equally prolific with themselves, belong to one and the same species, it follows that these facts afford a strong confirmation of the conclusion deduced from many others, viz, that *there is but one human species;* for, as just remarked, while the offspring of distinct species (real hybrids) are so little prolific that their stock soon becomes extinct, it is found that the mixed offspring of different varieties of the same species generally exceeds the parent races in corporeal vigor and in the tendency to multiplication. This law, however, does not apply to the moral and intellectual endowments; for we find these deteriorated in the European by the mixture of any other race, and, on the other hand, an infusion of Caucasian blood tends in an equal degree to ennoble these qualities in the other varieties of the human family. It is, indeed, an undisputed fact, that all the races and varieties of mankind are equally capable of propagating their offspring by intermarriage; and that such connections when contracted between individuals of the most dissimilar varieties, as for instance the Negro and the European, prove, if there is any difference, even more prolific."

This tendency to a rapid increase is especially obvious among the so-termed mulattoes of the West Indies; and as here fortunately the endemic influence of unfavorable social causes do not, as in the United States, operate against the mulattoes, the result may be regarded as having a direct bearing upon the question at issue. Upon this point, we are content to adduce the evidence of the erudite and philosophic James Cowles Prichard, who, in regard to several mixed human races, observes as follows:

"I believe it may be asserted without the least chance of contradiction, that mankind, of all races and varieties, are equally capable of propagating their offspring by intermarriages, and that such connections are equally prolific, whether contracted between individuals of the same, or of the most dissimilar varieties. If there is any difference, *it is probably in favor of the latter.*

"If we inquire into the facts which relate to the intermixture of Negroes and Europeans, it will be impossible to doubt the tendency of the so-termed Mulattoes to increase. The Men of Color, or the mixed race between the Creoles and the Negroes, are, in many of the West India Islands, a rapidly increasing people, and it would be very probable that they will eventually become the permanent masters of those Islands, were it not for the great numerical superiority of the genuine Negroes."

Dr. Prichard gives a table, extracted from the work of M. Rugendas, showing the great number of Mulattoes in many parts of this continent. The following are a few of the estimates:

	Year.	Whites.	Men of Color.	Negroes.	Indians.
Mexico,	1824	1,360,000	2,070,000	8,400	3,430,000
Guatemala,	1824	190,000	320,000	10,000	965,400
Colombia,	1824	600,000	720,000	470,000	854,600
Peru,	1795	136,311	285,841	40,336	608,911
La Plata,	1824	475,000*	305,000	70,000	1,150,000
Brazil,	——	843,000	628,000	1,987,500	300,000
West Indies,	——	450,000	1,600,000		——

"In order to establish this general fact," says Prichard, "of the existence of intermixed tribes descended from different races of men, I shall give a short account of several examples, in which it appears that an entirely new and intermediate stock has been produced and multiplied.

"The Griquas, or Griqua Hottentots, are well known to be a tribe of mixed origin, descended from the Dutch colonists of South Africa on one side, and from the aboriginal Hottentots on the other. They live on the borders of the colonial territory, and are a numerous and rapidly increasing race. The Griquas now occupy the banks of the Gariep or Orange River, for the space of at least 700 miles, where their numbers were estimated some years ago to be at least 5000 souls. They are powerful marauders, and harass by their predatory incursions all the native tribes in their vicinity, and are frequently troublesome to the neighboring colonists. Great numbers of the same mixed race are in other parts thriving agriculturists; and there is a large community at Griqua Town, settled under the government of the missionaries of the United Brethren, by means of whose instructions they have been converted to Christianity, and have adopted the habits of civilized society."†

* This total includes the Creoles.

† Thompson's "Travels in South Africa."

Prichard also describes a very remarkable race in the Brazils, termed by the Portuguese *Cafusos*, known to have sprung originally from a mixture of native Americans with the negroes imported from Africa.

"But what gives these Mestizos a peculiarly striking appearance is the excessively long hair of the head, which, especially at the end, is half-curled, and rises almost perpendicularly from the forehead to the height of a foot or a foot and a half, thus forming a prodigious and very ugly kind of peruke. This strange head of hair, which at first sight seems more artificial than natural, and almost puts one in mind of the *plica Polonica*, is not a disease, but merely a consequence of their mixed descent, and the mean between the wool of the negro and the long stiff hair of the American."*

A description of another race of mixed origin and strongly marked characteristics, is given by Prichard, namely, "the Papuas, spread along the northern coast of New Guinea and the adjacent islands." Passing over the details of their characteristics, it is remarked in conclusion:—

"It is not improbable that these tribes of the sea-coast may have come to the shore of New Guinea and the adjoining islands from some distant part of the Indian Archipelago; but, whatever was the quarter whence they spread, they appear to afford an example of a mixed breed of men, who retain certain characters derived from their double ancestry. These traits have, however, been transmitted as permanent characteristics through many generations, since in the time of Dampier they seem to have been fully developed."

Upon this point, the same patient investigator arrives at the following conclusion:—

"It appears to me unquestionable that intermediate races of men exist and are propagated, and that no impediment whatever exists to the perpetuation of mankind when the most dissimilar varieties are blended together. We hence derive a conclusive proof, unless there be in the instance of human races an exception to the universally prevalent law of organized nature, that all the tribes of men are of one family."

It is well remarked by Prichard, that perhaps the solution of the problem of the unity of the human family, might be safely left on this issue, or be considered as obtained by this argument.

We have thus presented some statistical facts relative to the increase of the Mulattoes in the West Indies, and in some of the states of North and South America, which is certainly more than the two writers before us have done; and these statistics do not by any means bear out the conclusion of these same writers in reference to the Mulatto. "Philanthropist" has indeed said, as already quoted—

"The same comparative mortality between the mulattoes and blacks exists in the West Indies and Guiana, where unfavorable social causes do not operate against the mulattoes, as in the United States."

Now, as we have no statistical knowledge in respect to this question in the United States, it is fairly presumable that the West Indies and Guiana have made no greater advances in this department of science.

* Von Spix und Martius, "Reise durch Brasilien," Theil I., as quoted by Prichard.

Hence we cannot but feel surprised that any positiveness should be assumed on these points.

There is one proposition, however that we will not oppose, which is, "that the mortality of the free people of color, in the United States, is more than one hundred per cent. greater than that of the slaves." Although we have no positive data on this subject, yet we can indirectly confirm it by statistical facts relative to certain physical defects.

Although but indirectly connected with the leading object of this paper, yet it will not be regarded as out of place to present here the general results obtained from the statistics of the census of 1840, in relation to the *Deaf and Dumb*, the *Blind*, and the *Insane and Idiots*, both among the whites and the colored, and the comparative ratio between the free colored and the slaves.

CLASSES.	Non-slave-holding States and Territories.			Slave-holding States and Territories.		
	Deaf and Dumb.	Blind.	Insane and Idiots.	Deaf and Dumb.	Blind.	Insane and Idiots.
Free White persons	1 in 2947	1 in 3068	1 in 996	1 in 1902	1 in 2412	1 in 949
Colored persons, free and slave	1 in 704	1 in 545	1 in 158	1 in 3773	1 in 1729	1 in 1361

What an awful result is here presented as regards the condition of the free colored class of the non-slave-holding division! In respect to the ratio of *deaf and dumb*, it is found more than five times higher among the free than the slave; as regards the *blind*, the ratio is more than three times greater; and respecting the *insane and idiots*, the contrast is still greater, being as ten to one! The fact that there is no distinction, in either division, made between the free colored and the slave, is no argument against these results; but, on the contrary, as the non-slave-holding division has one slave for every fifty free colored persons, while the slave-holding division has one free colored person for every thirteen slaves, it follows that the contrast, were these exceptions excluded, would, in a relative degree, be augmented.

On the present occasion, we will attempt no explanation of these most extraordinary results, reserving it for our general view of the vital statistics of the United States; but, lest some of our readers should retort upon us that "figures are not facts," we will add, that in the Transactions of the Medical Society of the State of New York, vol. III., there is a paper entitled "*Statistics of the Deaf and Dumb in the State of New York, the United States, and in various countries of Europe, by T. Romeyn Beck, M. D.;*" and in this is found the following paragraph:

"There is one comment," he says, "made by the editor of the work from which I have taken this abstract, to which I cannot too pointedly call the attention of my readers. It is the fact of the far greater prevalence of this infirmity among the free blacks than among the slave population. Thus in the ten Northern States,* as enumerated, the proportion is 1 in 1002, although there is scarcely a slave in these States. So also in the North-western district,† the

* Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, Vermont, New York, New Je sey, Pennsylvania, and Delaware.

† Ohio, Indiana, Illinois, and Michigan.

proportion is 1 in 1323. While in the Southern States,* where all are slaves, the proportion is 1 in 3402, and in the South-western,† 1 in 4558. If physical causes have the slightest effect in producing this malady, does not the above statement prove that the condition of our free blacks is infinitely worse than that of their brethren at the South?"

This result is still further substantiated by a statistical account of the *Blind*, in the United States, by Samuel Hazard, Esq., of Pennsylvania.

"The *non*-slave-holding states," he says, "give aggregately the proportion of colored blind at 1 in 912, while in the *slave*-holding states it is 1 in 1676 of the colored population."

We will here add one paragraph more, less on account of its preciseness than in being of very recent origin:

"*Paris Academy of Sciences, sitting of July* 10.—The only paper of general interest read was one by M. Moreau de Jounès, on the extent of insanity in France. The author's tables are founded upon the average of eight years, and are, therefore, announced as certain. They are probably nearly so; but as the last regulations respecting lunatic asylums have not been in force more than four or five years, and previously to the introduction of them there were in France, as there are still in some other countries, gross abuses as to returns, we may be permitted to question the accuracy of the early returns. The author states the number of insane persons in France to be 18,350. In every 1000, there are on an average 221 idiots and 112 epileptic persons. The annual mortality is great, being from nine to ten per cent.; but this is, we believe, quite within the average of the returns of other countries. M. Moreau de Jounès states a fact which, although not new to medical men, may surprise some readers. Instead of its being found that moral causes have a great preponderance in cases of insanity, it appears that of every ten cases, on an average, the loss of reason in seven proceeds from physical causes, and moral causes only operate on three. Taking the returns of M. Moreau de Jounès as correct—and we have no reason to suppose that they are wide of the truth, M. Moreau de Jounès being a most careful and conscientious statistician—they show an important result, viz., that the number of insane persons in France is considerably less than has hitherto been supposed."

Let us now return to Dr. Nott, who, contrary to the voice both of humanity and of philosophy, maintains that "*the Anglo-Saxon and Negro races are distinct species.*"

The solution of the problem of the *unity* of the human family, as before remarked, might be safely left to the argument connected with the phenomena of hybridity; but this is but one among numerous general principles which go to establish the same conclusion. To answer the various questions started by Dr. N., would, however, require the space of this whole number. Thus—

"Look first," he says, "upon the Caucasian female with her rose and lily skin, silky hair, Venus form, and well chiseled features—and then upon the African wench with her black and odorous skin, woolly head and animal features—next compare their intellectual and moral qualities, and their whole anatomical structure, and say whether they do not differ as much as the swan and the goose, the

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*Maryland, District of Columbia, Virginia, North Carolina, South Carolina, and Georgia.

†Alabama, Mississippi, Louisiana, Tennessee, Kentucky, Missouri, Arkansas, and Florida.

horse and the ass, or the apple and pear trees. How all this comes to pass is not for me to say—it has pleased the Creator, at some period of time, so to make or change them. The American Indian, too, though living in all latitudes and in a savage state; besides his hair, beardless chin, well-shaped foot and leg, and tawny skin, has many other peculiarities which are just as striking."

We shall now briefly notice several of these points, continuing our extracts from the Biblical Repository; and first of the *complexion*.

"In order to show that the complexion, as well as the color and texture of the hair, belonging to any particular race, are not *distinctive*, but merely *typical* characteristics, it will be necessary to take a general survey of mankind. It will be found that these characteristics become so modified, altered, and evanescent, that to draw an absolute line of demarcation among five, or any other number of varieties of the human family, is totally impossible. The Negro and the European are the two extremes, which, as in every other particular in which the various tribes of human kind differ, pass into each other by insensible gradations. The terms, white and black races, can be used only in the general sense of Caucasian and Ethiopian varieties. The complexion implies no distinction of species; for it can be readily shown that, in this respect, the African tribes vary much, that the American aboriginals exhibit the extremes of white and black, and that even the Caucasians, generally characterized as white, present nations decidedly black. In the frontispiece to the third volume of Prichard's 'Researches into the Physical History of Man,' we have a striking specimen of a black Caucasian, being a portrait of Rahomun Roy—'a Brahmin of undoubtedly pure race.' Among the Arabs, according to the country they inhabit, we discover the extremes of complexion. 'The general complexion of the Shegya Arabs,' says Mr. Waddington, 'is a jet black.' He adds—'The Shegya, as I have already mentioned, are black—a clear, glossy, jet black, which appeared to my then unprejudiced eyes to be the finest color that could be selected for a human being. They are distinguished in every respect from the Negroes by the brightness of their color; by their hair and the regularity of their features; by the mild and dewy lustre of their eyes; and by the softness of their touch, in which last respect they yield not to Europeans.' As the Arabs on the Nile do not intermarry with the natives, as appears by the accounts given by Burckhardt and Ruppell, the blackness of their complexion can be ascribed to climate only. In more northern, and particularly in more elevated regions, the hue of the Arab's skin is not less fair than that of the European. 'The Arab women,' says Bruce, 'are not black; there are even some exceedingly fair.' Among the Otaheitans, who have been long celebrated for their personal beauty, the skin of the lower orders has a brown tint, which becomes so gradually lost in those of a superior caste, that the complexion in the higher ranks is nearly white, or at least but slightly tinged with brown. On the cheek of the women, a blush may be readily observed. The usual color of the hair is black, but it is of a fine texture, and not unfrequently brown, flaxen, and even red. Of the natives of the Marquesas, it has been said that 'in form they are, perhaps, the finest in the world,' and that their skin is naturally 'very fair;' while in the color of their hair, all the various shades found in the different tribes of the Caucasian race, are exhibited.

"Even among the American tribes, known the world over as the

'*red-man*,' the most remarkable diversities of complexion are presented, varying from a decided white to an unequivocally black skin. Of so deep a hue are the Californians, that La Perouse compares them to the Negroes in the West Indies. 'The complexion of the Californians,' he says, 'very nearly resembles that of those Negroes whose hair is not woolly.' In contrast to these black Californians, we have, on our north-west coast, tribes with skins as white as the complexion of the natives of southern Europe. Captain Dixon describes a female whose 'countenance had all the cheerful glow of an English milk-maid, and the healthy red which flushed her cheek, was even beautifully contrasted with the whiteness of her neck; her forehead was so remarkably clear that the translucent veins were seen meandering even in the minutest branches.' 'Although the Americans,' says Dr. Morton, 'possess a pervading and characteristic complexion, there are occasional and very remarkable deviations, including all the tints from a decided white to an unequivocally black skin.'"

Upon this point, Dr. Prichard comes to the following conclusion:

"That the different complexions of mankind, are not permanent characters, may be sufficiently proved by numerous facts collected from the physical history of particular races of men. It is hardly necessary, in this instance, to appeal to the infinite number of phenomena which are to be found, precisely analogous in all the circumstances of their origin and subsequent propagation and permanence in entire breeds, in the various tribes of animals, there being scarcely any tribe of warm-blooded creatures which are not subject to become thus diversified. The reader will find in the following outline of the history of particular tribes of the human family, instances of this variation of color,—of a change from white to black, and from black to white, or of both complexions actually subsisting in the undoubted progeny of the same stock; and these instances so multiplied and so well authenticated, as to leave no doubt as to the conclusion which we are obliged to draw in this part, at least, of the investigation before us, as to the great question of the unity or diversity of the human species."

Next, as regards the *hair*.

"As much stress has always been laid upon the national differences of the human hair, by those who hold that the Negro is of a distinct species from our own, a few general observations will not be deemed out of place. As regards the *hair, beard, and color of the iris*, we observe, indeed, strongly marked varieties, all these having a relation with the color of the skin. While the head of the Caucasian race is adorned with an ample growth of fine locks, and his face with a copious beard, the Negro's head presents short woolly knots, and that of the American or Mongolian, coarse and straight hair, all having nearly beardless faces; and with this diminution of the beard is combined a general smoothness of the whole body. That the coloring principle in the skin and hair is of a common nature, is evident from the fact, that among the white races every gradation from the fair to the dark is accompanied by a corresponding alteration in the tint of the hair. This remark applies equally to the colored varieties of men, for all these have black hair; but among the spotted Africans, according to Blumenbach, the hairs growing out of a white patch on the head are white. These facts in connection with others observed among inferior animals, as the dog, sheep, and goat, prove sufficiently that a distinction of species cannot be

established on the mere difference in the hair. Upon this point, Prichard very happily remarks:—

"That if this cuticular excrescence of the Negro were really not hair, but a fine wool,—if it were precisely analogous to the finest wool,—still this would by no means prove the Negro to be of a peculiar and separate stock, since we know that some tribes of animals bear wool, while others of the same species are covered with hair. It is true that in some instances this peculiarity depends immediately on climate, and is subject to vary when the climate is changed; but in others, it is deeply fixed in the breed, and almost amounts to a permanent variety."

But the so-called *woolly* hair of the Negro is not wool in fact, but merely a curled and twisted hair. This has been proved by microscopic observation, upon the well-known law, that the character which distinguishes wool from hair consists in the serrated nature of its external surface, giving to it its felting property.

We shall notice one more assertion:

"There are also some curious facts," says Dr. Nott, "connected with the brain and intellectual faculties, which bear strongly on the question of distinct species. It is well settled by anatomists and physiologists, that the brain of the Negro, compared with the Caucasian, is smaller by a full tenth; that its nerves are larger, the head differently shaped, the facial angle less, and the intellectual powers comparatively defective."

Without disputing the proposition, it would certainly have been desirable, on the part of Dr. Nott, to state upon what authority he makes the assertion that anatomists and physiologists have determined that the cranium of the Negro has less capacity than that of the European. Tiedemann, who is very high authority, shows, for instance, that there is no difference,—a result based on numerous measurements. But surely this test of the mere relative capacity of European and Negro skulls, does not afford a fair criterion of the comparative degree of intellectual power; for no one who has kept pace with the progress of modern psychological science, will deny that the organs through which the nobler attributes of man act and manifest themselves, reside in the anterior portion of the brain; and hence how absurd is the idea of taking the whole mass of the brain as a standard of moral and intellectual power! But as this new theme opens upon our view a multiplicity of questions, we are obliged to cut short the whole subject with one argument more.

The classification of skulls under five general forms, viz., the Caucasian, Mongolian, American, Ethiopian, and Malay, is of course entirely arbitrary; and as in every other corporeal diversity, so we find in regard to crania an imperceptible gradation among the nations of the earth, filling up the interval between the two extremes of the most perfect Caucasian model and the most exaggerated Negro specimen. Hence we must conclude that the diversities of skulls among mankind do not afford sufficient ground for a specific difference—an inference confirmed, as will be seen, by the variations which occur in animals of the same species. We might show, as we think, conclusively, did space allow, that there is a connection between the leading physical characters of human races, (and especially as regards cranial formation,) and the agencies of climate and their habits of existence. This is very apparent

in the configuration found in our Aborigines, and equally so in all other races in the nomadic and hunter conditions, consisting of the greater development of the jaws and zygomatic bones; in a word, of the bones of the face altogether, as compared with the size of the brain. That the development of the organs of taste and smell, is in an inverse ratio to that of the brain, and consequently to the degree of intelligence, is considered by Bichat as almost a rule in our organization. By this principle, as an index to those exalted prerogatives which elevate man above the brute, was the Grecian sculptor guided. Although, upon this point, the facial angle of Camper is not an exact test, yet it may be remarked that in the human race, it varies from sixty-five to eighty-five degrees, the former being a near approach to the monkey species. Among the remains of Grecian art, we find this angle extended to ninety degrees in the representation of poets, sages, legislators, etc., thus showing that the relation here referred to was not unknown to them; while, at the same time, the mouth, nose, jaws, and tongue, were contracted in size, as indicative of a noble and generous nature. In the statues of their gods and heroes, the Greeks gave a still greater exaggeration to the latter, and reduction to the former characteristics, thus extending the forehead over the face, so as to make a facial angle of one hundred degrees. It is this that gives to their statuary its high character of sublime beauty. Even among the vulgar, we find the idea of stupidity associated with an elongation of the snout.

With this condensed and, at the same time, imperfect, view of this grand question, we submit it to our readers, who will not fail to perceive that both Dr. Nott and a "*Philanthropist*," in the laudable desire no doubt to advance science, have unfortunately made a retrograde movement in human knowledge, opposing, of course undesignedly, the onward march of civilization; and it has ever been thus, by denying an equality in the original endowments of certain families of the human race, that writers have attempted to justify the institution of perpetual servitude. How much more noble, more generous, and just, are the reasonings of M. Voisin, a French philosopher—a class who are seldom accused of leaning toward the doctrines of the Bible—contained in the following extract:

"It is by working in this direction, by overstepping those lines of demarcation which pride and ignorance have set up between man and man, by studying the brains of individuals and of nations, by disclosing their organization, by showing that they are all made upon one model, by placing on the same line, as to their intellectual and moral faculties, alike the Negro and the European, that science may yet have to rejoice in giving a firm basis to morality, or at least in consecrating some of its best principles. It justifies the eloquent pleadings of those gifted men who, being far a-head of the age in which they lived, have deemed it their sacred duty to consider the whole human race as one family, and to claim for every one alike equal liberty, justice, and protection."*

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* *De l'Idiotie chez les Enfans, etc.* Par F. Voisin. Paris, 1843. From the *Medico-Chirurgical Review*, for July.

ART. III.—*Case of Ovarian Tumors—both the right and the left being removed at the same operation*, by JNO. L. ATLEE, M. D., of Lancaster, Pa. [Communicated by letter to the Editor, by J. M. FOLTZ, Esq., Surgeon U. S. Navy.]

Lancaster, Pa., August 1, 1843.

MY DEAR DOCTOR—A few days ago I was invited by my old friend, Dr. Jno. L. Atlee, of this city, to accompany him on a visit to the patient from whom he removed, seven weeks ago, *two ovarian tumors.* As the operation of removing both diseased ovaria had never been previously performed, I felt much interest in seeing the case. We found the patient waiting to accompany her surgeon on a morning drive, agreeably to previous arrangement; but the Doctor was prevented doing so, in consequence of unforeseen professional engagements. The lady, who is under thirty years of age, and has never been married, had suffered from ascites for the last three years; and for this disease, she had been tapped four times, the ovarian tumors having remained undetected until after the third *paracentesis.* Convinced that these enlarged ovaria were the cause of the dropsy, Dr. A. proposed their removal, to which the heroic patient consented.

An incision about nine inches in length, in the course of the linea alba, and commencing at the pubes, was made into the abdominal cavity. The left ovarian tumor was found attached merely by the round ligament, which floated free in the abdomen; while the tumor on the right side, adhering about two-thirds of its extent to the brim of the pelvis and the omentum, required some careful dissection in its removal. They were both removed without any copious hæmorrhage; and this large wound, which was brought together by the interrupted suture, is now, seven weeks after the operation, completely united, with the exception of the lower extremity, where the ligatures upon the round ligaments still remain. As not an unfavorable symptom has thus far been presented, the patient may be safely pronounced out of all danger incident to this terrible and unprecedented operation.

Although the removal of diseased ovaria had its advocates in the last century, the operation (*vide Good's Study of Medicine*) having been actually done, and successfully too, in 1776, by L'Aumonier, surgeon-in-chief of the hospital of Rouen; yet, in consequence of its condemnation by such high authority as the names of De Haen and Morgagni, it became so completely neglected, that when Dr. McDowell, of Kentucky, reported three cases in which he had operated successfully, it was discredited by the Medico-Chirurgical Review; but this opinion was doubtless due in part to certain improbabilities connected with the details.

Professor N. Smith, of Yale College, reported, in 1822, in the American Medical Recorder, an interesting case of the successful extirpation of an ovarian tumor. In 1826, Dr. David L. Rodgers, of New York, performed the same operation; and so successful was the issue, that "in six weeks from the period of the operation, her catamenia had returned, and her health entirely recovered." This operation has been done no less than five times by Dr. Clay, of Manchester, and each time,

too, successfully. Dr. Reese, in his notes to Cooper's Surgical Dictionary, says, that in the London Medical Gazette, for 1829, three cases of extirpation by Carysman, are reported by Dr. Hopfer, of Biberback; and that of these, two proved fatal, while the third was so successful that the woman subsequently bore children. In the Edinburgh Journal, for October, 1820, it is related by M. Lizars, that he attempted to extirpate an ovarian tumor; but no tumor was found, and the case proved fatal. Two cases of the operation have since been reported by the same distinguished surgeon, but the results are not known. Dr. Alban Goldsmith, of New York, has also operated by extirpation thrice; the first two having been successful, while the last proved fatal; but in the third case he ascribes the unsuccessful issue solely to the circumstance, that he had trusted to an animal ligature, which, giving way prematurely, caused the supervention of secondary hæmorrhage within the abdominal cavity. By Professor Mussey, of Cincinnati, a successful case is reported, in which he opened the sac and effected adhesion between its walls.

As regards the extirpation of these tumors, the late Dr. McDowell, of Kentucky, may be considered a sort of pioneer, having done it oftener and more successfully than any other surgeon in the world; besides, he laid open the peritoneum to a great extent for extirpating other abdominal tumors. But Dr. Goldsmith relates a curious case in which he was concerned with this pioneer-operator. The patient, who had suffered, during a considerable period, from ascites, had tapped herself no less than ninety times; and discovering at length a tumor, which she supposed to be the cause of her dropsy, she made application to Dr. McDowell for its extirpation. The event, however, proved, much to the surprise of the two surgeons, that the tumor was merely a mass of the intestines conglomerated by adhesions. The operation was abandoned, and the woman died; but this case, as well as that of Lizars', should certainly not be placed in the category of unsuccessful operations for this disease.

In view of this liability to error in our diagnosis, this operation is even now condemned by many. "I have known," says Dr. Reese, in his notes to Cooper, "a number of these 'exploring operations,' as they are called, result disastrously, like Dr. McDowell's case; for in several instances the operation has been abandoned, but the patient has died on the table. To cut into the abdomen in an exploring expedition may well be regarded as of questionable morality, and is 'most villanous surgery.'"

I have thus briefly summed up a history of the operations for diseased ovaria, under the belief that these cases, combined, tend to establish a new principle in surgery, viz., the comparative safety of making large openings into the cavity of the abdomen. Wounds of the abdomen, involving lesions of the intestines or other abdominal viscera, with the operations for strangulated hernia, have been the only cases in which surgeons have interfered with the abdominal contents; and the great fatality of these cases always inspires much apprehension, when the abdominal cavity is opened. The successful result, generally speaking, attending the extirpation of enlarged ovaria, would seem, however, to show that operations within the abdomen are, by no means, so fatal as the profession have been led to believe—an opinion that is substantiated by the difficulty so frequently experienced in exciting

inflammation in the tunica vaginalis testis, in the operation for hydrocele. Besides, in the case before us, in which both ovaria have been extirpated, for the *first* time, we have additional evidence of the comparative safety of this operation. Here, then, is another of the triumphs of American surgery,—the introduction of an operation with much practical effect, which is regarded in Europe, with few exceptions, as unsafe and impracticable.

The tumors weighed two pounds: one, a pound and a quarter; and the other, three-fourths of a pound. But a further detail of the case might be deemed improper, as a full account of the operation and of the subsequent treatment, has been promised by Dr. Atlee for the American Journal of the Medical Sciences.

I am, respectfully, yours, &c.,

J. M. FOLTZ.

To Samuel Forry, M. D.

Art. IV.—*Obstetrical Auscultation.*—By H. Van Arsdale, M. D., of New York.

Auscultation, as a means of diagnosis in pregnancy, though universally acknowledged to be of great importance, has not yet received in this country the attention that it deserves. The repugnance which most private patients have to its employment, especially during the progress of their pregnancy, and the limited opportunities for observation afforded by our hospitals, constitute perhaps the chief reasons why so little has been said or written on the subject. The author claims but little of originality in the following paper. The theories and opinions here advanced, have been mostly adduced from European writers; and from the mass of conflicting opinions on this subject, those have been adopted which have been found to correspond with the author's own observations.*

Dr. Mayor, of Geneva, in the year 1818, perceived for the first time, through the abdominal parietes, the pulsations of the fœtal heart; and he thus added, in the latter stage of pregnancy to the signs already known, this new sign, more certain than all the others.

But with the mere discovery, stopped his investigations; and notwithstanding this new ray of light had been let in upon the medical world, it attracted but little attention, until three years afterward, when mere chance led M. de Kergaradec to apply the method of Laennec to the study of pregnancy. It is, therefore, to this physician, rather than to the original discoverer, that belongs the credit of having directed, in an especial manner, the attention of obstetricians to this new mode of

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*The works here referred to are chiefly "*Auscultation Obstetricale,*" *par M. le Docteur Depaul;* "*Traité Pratique d'Auscultation,*" *par MM. Barth et Roger;* "*Traité Pratique d'Accouchments,*" *par M. Moreau;* and a "Thesis on Obstetrical Auscultation," by Dr. Carriere, published at Strasbourg.

diagnosis,—of having himself made numerous applications of the discovery,—and of having constructed a table, almost complete, of the advantages which might arise from its employment.

M. Kergaradec died, leaving this legacy to the world; but it remained for a long while without having its just value appreciated. Indeed, several eminent French physicians, after the appearance of his work, pretending to have investigated the subject, not only denied the value and importance of the discovery, but some even contended that the new means were entirely ideal and false, instead of being true and useful. They averred that they had listened and investigated, but that they were unable to discover any stethoscopic signs in the pregnant woman, which they could not find with equal ease in the unimpregnated state. And so much weight and influence did the opinions of these men exercise, that the new method was once more threatened to be neglected, if not entirely forgotten.

In Germany, the discovery was received with more favor, and several of the leading German physicians made minute and lengthy researches, and almost all of them confirmed the results obtained and published by M. Kergaradec. In 1823 appeared the work of Ulsamer, founded on numerous observations; and he contended that auscultation was one of the best means of determining the existence and date of pregnancy,—of recognising the presence of more than one child,—of determining the situation of the fœtus in utero,—and of disclosing to the accoucheur the best period for performing upon the pregnant woman those operations which necessity may at times compel him to execute.

In 1826, M. Krusse published a thesis, having for its title, a "Dissertation on Obstetrical Auscultation;" and in this, he asserts that the absence of the sounds of the fœtal heart after the fifth month, is to be regarded as proof of the death of the fœtus. This, however, is not always true. In 1829, M. Manche thought the stethoscopic signs were only valuable as applied to the lower segment of the uterus; and for the better appreciation of these signs, he invented an instrument which he called a metroscope. This instrument consisted of a cylinder of wood, about twelve inches in length, and curved in the shape of the vagina, with the superior end hollowed out to receive the neck of the uterus; and this being introduced into the vagina, one end was applied to the neck of the uterus, while the operator placed his ear against the opposite extremity. But this instrument, besides being very painful to the woman, was found to give no more accurate results than the external examination; and it was, therefore, abandoned.

Some time after, M. Stolts, in the article entitled "Auscultation," in his Dictionary of Medical Studies, entered into a long argument on the value of the stethoscopic signs in pregnancy; and he came to the conclusion that the uterine souffle is only perceived at the point where the placenta is inserted, and that the position of the fœtus can be diagnosed from the pulsations of the fœtal heart.

In 1835, Dr. Depaul of Paris first turned his attention to this subject; and it is he who has given the most exact results, as well as the most precise value of the stethoscopic signs in pregnancy. Connected with the Maternité lying-in hospital, his opportunities for examination and investigation were unbounded; and keeping an exact register of his various examinations,—of his diagnoses,—of his views at the time of making the examinations,—and of their subsequent proof,—he has

been enabled to give to the world accurate statistics of the value of each stethoscopic sign; and to these data, reference will be frequently made in the sequel of this treatise.

Obstetrical Auscultation consists in the application of the ear or stethoscope to the abdomen of the pregnant woman; and its object is, to discover those peculiar sounds which are dependant upon pregnancy. Among the sounds which auscultation thus reveals, are two, which have an especial importance: these are the *uterine souffle*, and the *pulsations of the fœtal heart*. The former, or uterine souffle, though an important sign of pregnancy, is an *uncertain* one; but the latter, or the pulsations of the fœtal heart, is a certain and positive sign.

1.—THE UTERINE SOUFFLE.

M. Kergaradec, who first recognised the existence of this sound in the majority of pregnant women, regarded it as closely allied to the circulation of the placenta; and he, therefore, gave it the name of "placental souffle." Toward the end of the same year, Paul Dubois proved that the utero-placental vessels, as well as the strictly placental ones, were not concerned in its production, and he named it the "uterine souffle." This is, perhaps, the most appropriate term, as it not only expresses the origin of the sound, namely, the uterus, but also conveys an idea of the nature of the sound, that is, the souffle.

Some pretend to have discovered an analogy between the uterine souffle, and the various arterial souffles. There is in the former a peculiar resonance which belongs only to itself. In general it is pure and undulating, and is separated from the succeeding sound only by a very short interval. Those authors who have named it simple pulsation, or pulsation with a souffle, have not well understood the sensation it produces, because there is no pulsation or shock. It is a sound which cannot be compared to any other, and it is remarkable for the infinite variety it presents, both in the same and in different individuals.

For example, take the following table. In 336 women who afforded this souffle, it was discovered simple 227 times, although the examination was renewed at different periods of gestation. In forty-nine cases, the sound was *sibilant* or whistling, and with a very variable intensity. In twenty-nine cases it was of a *souflant* or snoring character; and in the thirty-two other cases, different sounds were discovered at different times. These results, when compared with the dates of the pregnancy at which they were obtained, also establish, in a general manner, the fact, that the intensity of this souffle varies from the moment of its appearance to the end of the sixth month, and that after this period its force remains nearly the same, notwithstanding subject to variation in its character; and often, too, it changes its place—changes which sometimes surprise and confuse an inexperienced ear.

Notwithstanding the almost innumerable changes which this souffle may undergo, there is one character which is invariable, namely, its perfect coincidence with the pulse of the mother. It sustains all the changes which that pulse undergoes, and is subject to all its influences; in health, or in sickness, an exact correspondence is always found; in fainting it disappears entirely. These facts prove that the uterine souffle is dependent upon the arterial circulation of the mother.

The various opinions and opposing theories on the cause and origin of the uterine souffle, are curious in themselves and not without their value.

It has already been stated that M. Kergaradec, the discoverer of this souffle, believed that it originated at the point where the placenta was attached to the uterus; but a later writer, Dr. Hohl, believes that the souffle is due to the placental circulation, and in support of this opinion, he offers the following propositions, which are here answered.

1. "No sound similar to this souffle is heard in any condition but pregnancy." This is not true, for it has been heard in other conditions.

2. "That it can be heard in almost every pregnant woman.

3. "That it is first heard in the fourth month of pregnancy, when the uterine vessels dilate and extend themselves to form the uterine portion of the placenta." As these second and third propositions are equally true, if we account, in any other manner, for the production of the souffle, they are, therefore, of no value.

4. "That it is most frequently heard on the right side of the uterus, where the placenta is usually situated." If it be true that the souffle is oftenest heard at the point where the placenta is situated, it is equally true that the uterine vessels are at that point more enlarged than at any other, and it may hence as well depend upon these vessels as upon the vessels of the placenta.

5. "This souffle is heard in a space circumscribed, and corresponding to the size of the placenta." This is not true, for it is sometimes heard in two distinct places, and sometimes at all points of the uterus.

6. "The intensity and clearness of the souffle decrease as the placenta becomes detached, and the sound entirely ceases as soon the placenta has been expelled." This is by no means true, for the souffle has been heard after the expulsion of the placenta; and it has been discovered in cases where women were delivered of children dead and putrefied, with the blood in the placenta coagulated.

Moreover, although it is unquestionably true, that the insertion of the placenta has been found to correspond with the precise point at which the souffle has been heard previous to delivery, yet it is, by no means, the universal rule. In several cases in which Dr. Depaul was obliged to introduce his hand to destroy the unnatural adherence of the placenta to the uterus, he found, by noting carefully during the progress of the labor the points where the souffle was most distinctly heard, that the insertion of the placenta did not correspond with the point at which he had heard the souffle.

Besides, during an epidemic puerperal fever, he had repeated opportunities of examining the uteri of women dead of peritonitis, while the traces of the adherence of the placenta to the uterus yet existed; and having in these cases before death, noted the point of origin of the souffle in many instances, these points did not at all correspond.

Laennec supposed that this souffle was produced in the principal artery which nourishes the placenta; but when called upon to demonstrate this artery it could not be found. Paul Dubois asserts that it is produced in those parts of the uterus which are most vascular, namely, in the lateral portions of that organ, as well as at the insertion of the placenta.

Some contend that it is produced in the iliac artery; but is this souffle

of the same nature as the common arterial souffles? The various souffles which are produced in the aorta or the principal arteries, are always accompanied by a shock more or less severe; and they seem, as it were, to come from a distance, having seldom any of those irregularities which so often attend the uterine souffle. These circumstances plainly show that it is not of the same nature as the common arterial souffles.

It is thus plainly evident that this souffle is not produced in the large arteries, and the simple fact that it has been heard in cases after the expulsion of the placenta proves beyond a doubt that it cannot depend either upon the placental vessels or the utero-placental ones. It must, therefore, be produced in the uterus itself. What then is the cause which so modifies the circulation of the uterus, as to produce this souffle? Dr. Kennedy compares the structure of the uterus during gestation to that of aneurism by anastamosis, and finds a complete resemblance between the sounds in these two different conditions.

The following theory, advanced by Dr. Depaul, seems to be the most plausible one: it is certainly a very ingenious one.

It cannot be denied that while the proper tissue of the uterus increases as pregnancy advances, the vessels which nourish that organ also increase in calibre. The veins which leave the sides of the uterus to return the blood to the hypogastric vein, have acquired a considerable capacity by the time they reach their respective trunks; and, on the other hand, the arteries of the uterus, while they are much enlarged in the uterus itself, are very little changed at the points where they are given off. Hence, while the venous blood finds an easy exit from this enlargement, and the veins are kept full to the very point where they empty into the larger vessels, the supply of arterial blood is not sufficient completely to fill the arteries of the uterus; for the reason, as we have just seen, that the vessels which bring that blood to the uterus have not enlarged in proportion to the vessels of the uterus itself. Now we already know that liquids which circulate in tubes do not produce any sound as long as those tubes are of equal calibre, and are kept full. This ceases to be true, when a contraction succeeds a dilation, or when the liquid is not in sufficient quantity.

At the point where the arteries penetrate the substance of the uterus, they are dilated, having consequently a calibre too large for the supply of blood which they receive; and this flow of blood in vessels too large for the quantity contained, accounts for the production of the uterine souffle; and here it may be added that this disproportion is not known to exist in any other part of the body.

But it may be asked,—If this be the true explanation of the production of this souffle, why is it not the same at all times and under all circumstances? Indeed, it has been already stated, that it not only changes its place, but sometimes entirely disappears.

If we receive as the theory of the production of this souffle, the enlargement of the arteries disproportionate to the supply of blood, cannot the changes in the souffle be accounted for by the ever-varying position of the fœtus? That this is the most probable explanation, appears from the following reasons: First, The arteries, as they are but partly filled with blood, must necessarily be more easily compressed than if full; and second, Because this very phenomenon has been frequently witnessed by Dr. Depaul, who, while listening to

this souffle, has perceived a movement of the fœtus; and immediately the souffle either changed its place, or it was for a time entirely lost.

It is important to know at what period of pregnancy this souffle may be heard for the first time. According to M. Kergaradec, it is not heard until after the fifth month; but, according to M. Monod, it may be heard toward the end of the fourth month. Dr. Depaul has made observations on this point in 380 cases; 307 of which had already passed the fifth month; and in 295 of these, it could be easily distinguished; but seventy-three had not yet reached the middle term of pregnancy. In the remaining twelve, the souffle could not be heard at any period; and in three of these there was a remarkable thickness of the abdominal parietes, while in the remaining cases there was nothing that should have prevented the hearing of the souffle, if it had existed. Of the seventy-three cases which had not yet reached the middle term of pregnancy, eleven had arrived at the end of the third month, and in *one* only of these was the souffle heard. Five were not so far advanced; and in them no souffle was heard. Twenty-two were between three and a-half and four months; and among these, the souffle was perceived in thirteen. In the nine others, it did not exist. Hence in thirty-six, who were near the end of the fourth month, this souffle was heard in all but nine.

M. Naegele asserts, that among thirty-five women, he has heard the uterine souffle in three, in the fourteenth week.

Forming a rule from these results, it would seem that this souffle is never heard as early as the beginning of the third month, and seldom at the end of the third month; but that in the latter part of the fourth month, and in the successive ones, it may usually be discovered. Consequently, in the first half of pregnancy we should scarcely expect to find it; while in the latter half we should always look for it confidently.

What is the most favorable point for hearing this souffle?

Of 295 cases, which afforded the souffle in question, it was distinctly heard in 182 of them on each side of the uterus, at a short distance above the crural arch. In twenty-seven of these cases, it could be heard only on one side and in the same place. In forty-three of them, it was heard at the base of the uterus; and in eighteen, the stethoscope could be placed nowhere on the uterine globe without discovering it plainly. In twelve cases, it could be heard in three distinct places; namely, at the sides, a short distance above the crural arch, and also at the base. Thus it would seem that this souffle is oftener heard double than single; and the points where we should first search for it, should be at the lateral portions of the uterus just above the crural arch.

In estimating the value of the uterine souffle, the first question that arises is: Are we to consider the detection of this sound a pathognomonic symptom of pregnancy, or may it be heard in abnormal conditions of the uterus or its appendages? If, according to some observers, it is produced in the vessels of the placenta, or if, according to others, it is produced in the utero-placental ones, then ought it to exist in pregnancy only.

Unfortunately for the advocates of both these theories, the uterine souffle has been heard in cases which time has proved to be other than cases of pregnancy. The recital of one or two of such cases, from several before me, will best show how this souffle may exist independent of pregnancy.

Case I.—In 1838, a woman, who had been married three years, without having had any children, was admitted into the hospital of La Pitié. For the last six months her menses had entirely disappeared. She presented most of the ordinary signs of pregnancy; and for the few previous weeks, she supposed she had felt the movements of a fœtus. The neck of the uterus, however, did not present the usual alterations, being in a state nearly natural; but, on applying the stethoscope, the uterine souffle was *distinctly heard*, at different intervals and in different positions. She had been at the hospital but a short time, when she was seized with a violent peritonitis, of which she soon died.

The autopsy revealed the fact that the enlargement of the abdomen was due to a fibrous tumor of the uterus, which had acquired the volume of that organ at about the fourth month of gestation. As there was here no placenta to which the uterine souffle might be attributed, it must have been produced in the enlarged vessels of the uterus.

Case II.—A woman believing herself to be about six months pregnant, applied for admission at the Maternité. Her menses had never entirely disappeared, but the swelling of the abdomen, the increase in size of her breasts, and occasional nausea and vomiting, left no doubt in her own mind as to her being pregnant. The neck of the uterus had undergone considerable alteration, being somewhat shortened and much softened. Auscultation discovered the uterine souffle, in several places, loud, pure, and *perfectly natural*, and her case was believed by her examiners to be one of pregnancy. Two months after, she was seized with irregular pains, and she believed herself to be in labor. Upon examination the neck of the uterus was found to be not the least dilated. The pains were followed by a violent peritonitis, of which she died in forty-eight hours.

A post-mortem examination disclosed a large fibrous tumor of the uterus.

These two cases are sufficient to show that the uterine souffle may exist in other conditions than pregnancy. It is, however, rare to find cases so well marked, and appearing to coincide so closely with cases of pregnancy, as those just detailed. If these cases have any value, it will be understood why this sign of pregnancy was considered an uncertain one. M. Monod has asserted that the uterine souffle gives exact ideas of the state and condition of the fœtus; but this is by no means true. Dr. Meigs, in his Philadelphia Practice of Midwifery, says that "the placental souffle indicates not only the presence of a fœtus, but that it continues to live, the sound always ceasing as soon as the fœtus expires." But this is equally untrue.

The uterine souffle, then, though not a *certain* sign of pregnancy, is yet a most valuable one, in diagnosis; but its absence does not entirely exclude the idea of pregnancy existing. It does not seem to be of any value in detecting the diseases of the placenta; for in several cases of induration and apoplexy of the placenta, which occurred to Dr. Depaul, there was no modification in the souffle to lead him to suspect the existence of either of these diseases. Neither is it of any value in detecting cases of double pregnancy, for it is sometimes heard in several distinct places when there is only one child; nor does it throw

any light upon the condition of the fœtus, inasmuch as it may exist whether the child be well or ill, alive or dead.

The preceding remarks upon the nature and value of the uterine souffle, will, it is thought, justify the following propositions:

1. This souffle differs entirely from the various souffles which are met with in the arteries. If they are all isochronous with the contractions of the left ventricle, still the souffle in question has characters which belong to it only; such as, its freedom from any shock, its closeness to the ear, and its want of uniformity.

2. If it is discovered in the vast majority of cases of pregnancy, still it may sometimes be found in other conditions of the uterus, more especially in fibrous diseases of that organ.

3. It cannot, therefore, be regarded as a certain sign of pregnancy, notwithstanding it is a symptom of great importance.

4. It is produced in the uterine arteries; and the explanation of its irregularities, intermittences, and its change of place, may be found in the difference of the calibre of the arteries on penetrating the womb, and also in the change of position of the fœtus in utero.

5. The point where this souffle is perceived does not always correspond with the insertion of the placenta.

6. The period of its appearance is by no means constant. It is extremely difficult to discover before the end of the third month; but it is rarely absent at the end of the fourth month, and continues to increase in intensity until the end of the sixth month. From this period it varies in its nature rather than in its intensity.

7. It is found most often in the lateral portions of the uterus, a short distance above the crural arches; but it is sometimes heard along the median line.

8. It is of no consequence in the diagnosis of cases of double pregnancy, of diseases of the uterus or placenta, or of the life or death of the fœtus.

II.—THE PULSATIONS OF THE FŒTAL HEART.

The double-pulsations, or the pulsations of the fœtal heart, are by far the more important of the two sounds discoverable by obstetrical auscultation. Since Mayor, of Geneva, who first recognised the presence of a double pulsation, when the ear is applied to the abdomen of a pregnant woman, and who assigned as its cause, the contraction of the fœtal heart, all observers who have since studied this phenomenon, under the different names of the fœtal pulsation, the beating of the fœtal heart, the redoubled pulsations, *cum multis aliis*, have coincided in assuming the same cause as its discoverer. Indeed, it would be difficult to assign any other; for the heart of the infant just born furnishes the same characters.

These double-pulsations then are a pathognomonic sign of pregnancy: for they can occur in no other condition than pregnancy, nor can they be produced by anything else than the contractions of the fœtal heart. We have seen that the uterine souffle may occur in certain diseased conditions of the uterus; but not so with the double pulsations. These can occur only in pregnancy. These pulsations are composed of two distinct sounds, separated by a very short interval. The first is stronger

and more resonant than the second, which, though sometimes very weak, yet never entirely disappears.

If the perception of the contractions of the fœtal heart, constitutes proof the most undeniable of the existence and life of the fœtus, it becomes of the last importance to be able to determine at what period of gestation they may for the first time be heard. It is, however, impossible to fix upon a period that will be true in every case. The different changes and developments which take place in the ovum from the moment of conception until the end of gestation, are not sufficiently uniform in all cases, to allow of certain calculations on this point; and farther, it is in most cases extremely difficult, if not absolutely impossible, to determine the exact time when conception has taken place.

The majority of observers seem to agree that, in the plurality of cases, it is extremely difficult to hear the pulsations of the fœtal heart, before the conclusion of the first half of pregnancy. They have, however, been heard at the expiration of sixteen weeks, by others at the end of fourteen weeks, and by others again at twelve weeks.

Dr. Depaul ausculted two women who were able to tell the precise date at which cohabitation and conception had taken place. Both of them were pregnant three and a half months, and in both were the pulsations of the fœtal heart distinctly heard. In thirty-six cases, which had reached the end of the fourth month, these pulsations were distinctly heard in twenty-five. In seven, they failed on account of the death of the fœtus; in two others, on account of the unusual thickness of the abdominal parietes; and in the remaining two, in consequence of the extreme agitation of the women.

In those cases which have reached or passed the fifth month of gestation, and in which there are no extraordinary circumstances to prevent, such as the death of the fœtus, an unusual thickness of the abdominal parietes, or extreme agitation on the part of the women, it is, with a very few exceptions, both possible and easy to detect the double pulsations. Of 307 cases, which had reached this term, these pulsations were easily perceived in 281; in twenty-one cases, they failed on account of the death of the fœtus; in two others, their absence was attributable to a large collection of serum in the cavity of the peritoneum; and in the remaining three cases, it was impossible to explain their absence. Hence, in the whole group of 307, they failed only in three, without a satisfactory reason; and in 179 other females, who were in the last three months of pregnancy, the double pulsations were absent but once.

It should be here remarked, that the number of the double pulsations has not been found to correspond in all cases. Observations were made on this point in 600 cases; and it was found that the highest number was 180 a minute, and the lowest ninety. These, however, are the two extremes, and rarely, very rarely, will a fœtal heart be found beating either as high as 180 or as low as ninety. Should we meet a case in which these pulsations descend to ninety, we may be assured that it is a case of extreme danger to the fœtus, either from compression of the umbilical cord, from premature detachment of the placenta, or from some other cause, which, will probably result in its death. The average number of beats of the fœtal heart has been found to be about 135. They continue to increase in intensity from the moment when first heard until parturition; but the number of beats does not seem to

vary as gestation advances. M. Bouilland, however, asserts, as the result of his experience, that the less advanced the pregnancy, the greater the number of beats.

Like the uterine souffle, the double pulsations are subject to changes; but, for the most part, they are merely momentary, and seldom of long duration. These changes and irregularities are most obviously perceived when the uterus is in a state of contraction, during parturition.

We might here examine the question, whether the impressions on the mother, or the variations in the maternal circulation, have any influence on that of her child. Almost all obstetric auscultators have agreed that the derangements of the maternal circulation have no effect on that of the fœtus. This has been satisfactorily established by numerous observations which have been made in those various pathological conditions in which the circulation of the mother is very materially affected. In fainting, for example, when the pulse of the mother is entirely gone, the pulsations of the fœtal heart are as calm and as regular as when the woman is in perfect health. In acute diseases, where the maternal pulse beats as high as 140 a minute, that of the fœtus retains its usual number. It is thus possible that the two pulses may coincide; but we may, notwithstanding, always distinguish them, as there will be a point on the uterus, where the double pulsations will be the loudest, while the beating of the mother's heart increases in intensity as we approach it.

It is important to determine the exact value of the alterations which may occur to the double pulsations of the fœtal heart, especially as regards their increase and decrease in number. The increase on the number of these sounds seems to be of little importance, since it rarely happens, and does not seem to denote any peculiar ill-condition of the fœtus. But when these sounds materially decrease in number or intensity, we hold, as it were, a true scale of the child's life. Attention to the diminution of these sounds is especially important in cases of severe and protracted labor; for, by this diminution, danger to the child is indicated, and it is a sign to which the accoucheur should always pay prompt attention. Death to the child has again and again resulted from a labor too long protracted. How many, alas! of these lives might have been saved, had there only been some indications to use those means of aid our art affords! It would be surely a painful occupation for any practitioner to be called to the bedside of a woman, in the commencement of what was doomed to be a tedious and protracted labor,—to hear the pulsations of the fœtal heart, regular in number and force, indicating full life and health,—and as the hours rolled on without the completion of the labor, to listen to the steady diminution of those beatings; and when, at last, unaided nature ends the labor, and the physician sees before him a mother almost exhausted and a dead child,—a child, whose life might have been saved by timely interposition,—this, I say, would not be a pleasant occupation. And yet how often has this very result happened; and all from the want of some certain information that the child was in immediate danger. But this information, happily, can now, in a majority of cases, be afforded by auscultation.

This application of auscultation has, in many cases, been the means of detecting the existence of more than one child in the cavity of the uterus; and that, too, when nothing but auscultation could, in the least

degree, lead one to suppose that such was the case. Indeed, without these means, it is almost impossible to foretell, with certainty, the existence of a double pregnancy, even after the membranes are ruptured and the water discharged. It seems, however, in order to diagnose with accuracy the presence of twins, that the woman should be near her full term. It need hardly be said that such a diagnosis is formed from hearing the beating of two distinct fœtal hearts; and between these two hearts, a difference of from eight to fifteen beats a minute will almost always be found. It will be readily understood how important such knowledge is to the practitioner, since it not only gains him credit for having made an accurate diagnosis, but also enables him to provide for what is often an unexpected occurrence. Positive opinions on this point ought, however, to be given with caution, since double pregnancy may exist, and the practitioner, from fortuitous circumstances, be prevented from hearing the pulsations of the hearts; but, where these two pulsations are heard, and especially if they differ in number, he may be assured of the presence of twins.

Is obstetrical auscultation of any value in detecting cases of extra-uterine gestation? Should we be called to a case in which there exists a tumor in the inferior part of the abdominal cavity, whose appearance had coincided with the disappearance of the menses in a female who is usually perfectly regular, and if on touching we should find the uterus small and empty, there would be good reason for supposing it to be a case of extra-uterine pregnancy; but if, in addition to these signs, the pulsations of the fœtal heart are distinguished, there is no longer any room for doubt, and it is the presence of this sign alone, that can make such a diagnosis a certain one.

III.—DIAGNOSIS OF PRESENTATIONS AND POSITIONS.

We come now to consider one of the most important applications of obstetrical auscultation, viz., its application to the discovery of the presentation of the fœtus, and of its precise position, even before the labor has commenced. The utility of such knowledge will hardly be denied; and it only remains to show that, in the majority of cases, such knowledge can be afforded by the stethoscope. It need hardly be said that the uterine souffle is of no value in furnishing this knowledge; but that it is the study of the double pulsations only that can give the desired information.

The point where the fœtal pulsations originate, is, without dispute, the fœtal heart; and, therefore, the nearer we approach this centre, the louder will these pulsations be heard. It is also undeniable that some parts of the thorax of the fœtus transmit sound better than others; and hence, that portion of the uterus which coincides with those points of the thorax of the fœtus, which best transmit sound, will be the point where these pulsations are most clearly heard.

If the heart of an infant just born be ausculted, the pulsations will be best heard in front and exactly in the præcordial region. The next loudest point is directly behind and in the same region. As the dilatations of the lungs and the noise of the air entering them unite to diminish the intensity of the beats, it follow that the further we remove from the point where the heart is situated, the fainter grow the sounds.

These statements, while they are undeniable when applied to the infant recently born, may be subject to modifications when applied to the fœtus in utero. The presence of a very great quantity of amniotic fluid may so dull the sound in front, that the pulsations behind may exceed in intensity those in front. It is, therefore, necessary to have some standard to which to refer each individual case; and the one naturally suggested, is the position which we find in the plurality of cases to exist. This position is as follows: The spinal column strongly flexed, representing a curve with the extremities more or less approaching, the convex part of which curve coincides closely with the corresponding concave surface of the uterus; but the concave or internal part of the curve is separated from the sides of the uterus by the different members of the body bent one upon another, with the spaces filled by the amniotic fluid, often in great quantity. It must, therefore, follow that it is through the back of the fœtus that the pulsations of the fœtal heart are likely to be the most intense, and the density of the lungs, while yet there has been no air in them, favors the transmission of sound.

If what has thus far been said be admitted, it is evident that the point where the double pulsations are loudest heard, corresponds with the dorsal portion of the fœtus, and we are, consequently, able to tell in what portion of the uterus the back of the child is situated; and from this knowledge we may obtain the relative situation of the other portions of the fœtus.

Before investigating this question, however, it is necessary to remark, that the diagnosis of the presentation by auscultation, if we desire an accurate one, should be made only when the woman is near her full term. It is evident that an accurate opinion cannot be given in the early months of pregnancy, on account of the small size and mobility of the child. At seven months, the motions and changes have become less frequent; but they still do sometimes occur at this period, and even later occasionally. Dr. Depaul cites the following case:

He ausculted a woman, who was eight and a half months pregnant, diagnosing a case of pelvic presentation. He then practised the touching; and as the neck of the uterus was relaxed, and sufficiently dilatable to admit the introduction of a finger, he thus discovered the two feet. This confirmed his previous diagnosis. He made known the result to the *sage-femme* of the hospital, who, it seems, had touched the same woman a short time previously, and discovered a presentation of the head. She immediately touched again, and this time found the feet presenting. Some days after, and just before the accouchment of this same woman, Dr. Depaul again ausculted and diagnosed a presentation of the head; and in a day or two labor came on, and the child was born in the first position of the vertex. In this case, then, admitting all the diagnoses to have been correct, there was first a presentation of the head, afterwards a presentation of the feet, and again one of the head; and consequently there were two complete versions, spontaneous and without the aid of the contractions of the uterus. This case is detailed to show that, notwithstanding uncommon, changes in the presentation may occur as late as eight and a half months, or even later.

Having established the fact, that for the fœtus in utero, the point where the double pulsations are loudest heard, corresponds with the dorsal portion and on a level with the heart, we will now return to the

proposition, to deduce from this knowledge the presentation, and in many cases the precise position of the fœtus before labor has commenced. And, first, as regards the *presentation:*

The heart in its natural position is placed much nearer the superior than the inferior extremity of the vertebral column; and consequently the pulsations will be discovered nearer its superior than the inferior extremity. If then the pelvic extremity of the child should present at the superior strait, the cephalic extremity will occupy the superior portion of the uterus, and hence it will be in this portion of the uterus that the double pulsations will be most audible.

If, on the other hand, it is the head of the child which presents at the superior strait, the pelvis of the child will be the most elevated portion of the trunk; and the pulsations of the fœtal heart will consequently be heard with greatest intensity in the inferior portion of the uterus. In this case, the pulsations decrease in force from below upward; while in the former case, they decrease from above downward. It is, therefore, proposed, in each individual case, to draw an ideal horizontal line, dividing the uterus into two equal parts, as here delineated; and thus all the cases in which the pulsations of the fœtal heart are heard with greatest intensity *above* this ideal line, will be cases of pelvic presentations, and all the cases in which the pulsations are heard *below* this line, will be cases of cephalic presentations.

Thus far it has been supposed that the membranes are not ruptured, and that the presenting extremity of the fœtus is on a level with the superior strait. It must not be forgotten, however, that sometimes during the eighth month, and always in the commencement of labor, the presenting extremity of the fœtus is engaged at the superior strait; and this circumstance should always be considered in forming our diagnosis; but the allowance necessary to be made is very slight.

It is obvious that in cases of face presentations, which are merely a variety of head presentations, depending upon the flexion of the head, obstetrical auscultation furnishes no knowledge; for, whether the presentation be one of the vertex or of the face, all other things being equal, the heart will be heard precisely in the same place.

Thus far has auscultation been applied to the discovery of the presentation; and it now remains to point out its value in diagnosing the position.

By means of the horizontal line just mentioned, we are enabled to tell whether the cephalic or pelvic extremity of the child presents; and hence it follows, (keeping in view the fact, already shown, that the fœtal pulsations are heard most audibly at the point which corresponds to the dorsal region of the child,) that if these pulsations are heard on the right side of the uterus, it is against the right wall of the uterus that the back of the child is lodged; while, if these pulsations, on the other hand, are heard on the left side, it is equally obvious that the child is placed against the left wall of the uterus.

We must, therefore, draw a vertical line following the linea alba, perpendicular to and crossing the horizontal line before mentioned; and thus we will have the uterus divided into four quarters,—two superior and two inferior, as is here represented.

Now, suppose the contractions of the fœtal heart are heard most distinctly in the left inferior quarter, it must necessarily be a case of head presentation, because the beatings are heard *below* the horizontal line; and as they are heard on the left side of the perpendicular line, it is on that side of the uterus that the back of the child lies. If the double pulsations are heard with greatest force in the right inferior quarter, it is again a presentation of the head, with the back on the right side. If they are most audible in the left superior quarter, the pelvis, because the pulsations are above the horizontal line, must present, with the back on the left side. If they are heard in the right superior quarter, it is again a presentation of the pelvis with the back on the right side.

But here arises a seeming difficulty in making an accurate diagnosis; for granting that it is always possible to tell whether the presentation be one of the head or pelvis, and whether the back of the child lies on the right or left side of the uterus, it may not, at first view, appear so easy to determine, in any given case, what is the precise position of the child. For instance, if the fœtal pulsations are heard in the left inferior quarter of the uterus, it is a case of cephalic presentation, and the back of the child is on the left side; but here it is necessary to determine still farther, whether it is a case of first position with the vertex to the left acetabulum, or of the fifth position with the vertex to the left sacro-iliac symphysis,—a difficulty which is enhanced by the circumstance that, in both these cases, the pulsations would be heard in the left inferior quarter. To diagnose these cases, it must be recollected that, as in a case of first position, both the head and trunk of the child are thrown more forward than in the fifth position, it follows that the pulsations would be heard near the linea alba; while in the fifth position, they would be more posterior, or farther from the linea alba.

The same remarks apply to a second or vertex-right position, as distinguished from a fourth, or a vertex to the right sacro-iliac symphysis. In the former, the pulsations would be heard in the right inferior quarter, but near the linea alba; while in the latter, they would be heard in the same quarter, but farther removed. It must be borne in mind that the farther from the linea alba the stethescope is applied, the more difficult it is, in consequence of the presence of the intestines, to discover the pulsations. On the supposition that the trunk of the child is advancing, can we tell in which iliac fossa its head lies? The pulsations will be heard in the left inferior quarter, in the left cephalo-iliac position of the right or left shoulder; and in the right inferior quarter, if the reverse be the case As these presentations, however, occur very rarely, it will be more difficult to diagnose such cases by auscultation than any others.

In practising obstetrical auscultation, the woman should be placed in a recumbent posture, the legs and thighs flexed so as to relax the abdominal muscles. With regard to the question, whether the ear or stethescope should be preferred in ausculting, almost all authors agree in giving a decided preference to the latter; and not without good reason. If the ear is applied to the abdomen, the side of the head covers so much space, and there are so many points which serve as conductors of sound, that often, instead of hearing one sound alone, there is heard a mixture of the uterine souffle, the double pulsations, and the beating of the mother's heart; but with the stethescope, the sounds which are produced in the small space which the instrument covers, alone are heard. Again, in cases in which the abdominal parietes are very thick, or there is need of ausculting in the sides or back, sufficient pressure cannot be made with the ear. Lastly, (and this alone is a sufficient reason for the employment of an instrument,) many patients would object to the practitioner's putting his ear to the abdomen, while they would have no objection to the employment of an instrument.

To become skilful and adept in this form of diagnosis, much practice and observation are necessary; and those who wish to investigate this subject, should avail themselves of every opportunity offered them for studying these phenomena. In every case of labor, even if it be somewhat advanced, auscultation should be employed. The patient's consent to the examination can usually be obtained, if she can be persuaded that any knowledge can thereby be gained that will assist in advancing her labor. It is, however, in cases which the practitioner is permitted to examine once or oftener during the progress of gestation, and then again just as labor commences, that are of most service in making him skilful in diagnosis. If, in such a case, just as the labor is commencing, and before anything is revealed by the touch, he makes a diagnosis which the event proves to have been a true one, it will do much to gain him a reputation as a skilful obstetrician.

These double pulsations cannot well be confounded with any other sound discoverable by auscultation. They can be readily distinguished either from the uterine souffle, or the beating of large arteries; for with these they do not correspond in point of number; nor can they be mistaken for the movements of the fœtus, as these are merely momentary.

There are two other sounds which are sometimes met with in obstetric auscultation. The one is the sound occasioned by the movements of the fœtus, which is very inconstant and varies in intensity. When the fœtal pulsations are difficult to discover, these sounds are important, as proving the existence of life in the fœtus. The other sound is the souffle in the umbilical cord. This souffle, if at all heard, is discovered in the middle region of the abdomen, in the commencement of labor. It seems to be heard most often in those cases in which the cord is wound around the neck of the child, and the souffle increases in intensity during the uterine contractions.

CONCLUSIONS.

The foregoing observations on the nature and value of the pulsations of the fœtal heart, seem to establish the following propositions:

1. These pulsations are a certain sign of the existence of pregnancy and of life in the fœtus.

2. The impressions upon, and the variations in, the circulation of the mother, have no effect on that of the child.

3. The *increase* in the number of the double pulsations is of little consequence, since it rarely happens and is usually of short duration. On the other hand, a *decrease* in the number, during parturition, and especially in a protracted labor, announces danger to the child, and indicates that the labor should be terminated by instruments, by version, or such other means as the case may demand.

4. We should not expect to discover these pulsations before the completion of the first half of pregnancy. The average number of beats is 135 a minute, and they continue to increase in intensity from the moment when first heard until parturition.

5. Cases of double pregnancy may be diagnosed from hearing the pulsations of two distinct fœtal hearts, and these pulsations usually differ in number from 8 to 15.

6. The detection of these beatings is of the first importance in cases of extra-uterine pregnancy, since, if they were not discovered, the case might be mistaken for a fibrous tumor of the ovaries or a simple cyst, and be treated as such.

7. They are discovered at a point corresponding with the dorsal præcordial region of the fœtus.

8. To discover the presentation, we have to draw an imaginary *horizontal* line, dividing the uterus into two equal parts. When the head presents, the pulsations are heard in the inferior half; and when the pelvis presents, they are heard in the superior half.

9. To discover the position, we have to draw an ideal *perpendicular* line, bisecting the preceding one. When the back of the child is turned towards the right side, the pulsations are heard in the right half; and when turned to the left, they will be heard in the left half.

Lastly, the entire absence of these pulsations should invariably deter us from performing the Cæsarean operation, or from making a division of the symphysis pubis; in a word, from doing anything which might prove injurious to the mother, in the vain hope of aiding the child, which we are now bound to believe to be no longer alive.

ART. V.—*The Physiological Effects of Highly-condensed Air upon the Human Body.* By W. DETMOLD, M.D.

As ours is the age in which the collateral sciences of natural philosophy and chemistry, in their rapid advance, have thrown much light upon hitherto unexplained points of physiology, all facts leading toward that object should be gathered and generalized. We will, therefore, give an extract from an article, which we met with in the Archives for Mineralogy, Geology, and Mining, edited by Dr. Karsten.* He describes

* Archiv für Mineralogie, Geognosie, Bergbau, und Hüttenkunde. Herausgegeben von Dr. C. J. B. Karsten und Dr. H. V. Dechen. XVI Band, 2tes. Heft. Berlin: 1842. The article in question is translated from the French, and taken from the Comptes rendues hebdomadaires desséances, du 2. Novembre, 1841.

a most ingenious and scientific operation in mining, where one element is made use of to resist another, and where human skill comes out victorious from the contest of the two elements.

The contrivance is to keep out the influx of water from a mining shaft by means of condensed air; but however ingenious and scientific this may be, it is foreign to this journal; and we will, therefore, limit ourselves to a short description, sufficient for our readers to understand the process. The part which interests us is the effect of the condensed air upon animal life, that is, the effect produced upon the miners who are at work in the condensed atmosphere. The account itself, as well as the journal in which we found it, is devoted to geology and mining; and hence, as the physiological facts are as foreign to them as mining is to us, we find a short notice only of the effects of the condensed air upon the workmen; and the explanatory reasoning on those effects, we have ourselves added.

From Doué, in the Department of Maine and Loire, to Niort, in the Department of the Nether Loire, extends a large bed of bituminous coal, known to geologists, which is covered by a layer of alluvial soil about sixty feet deep, (eighteen to twenty metres). This alluvial soil consists of strata of clay and floating sand, the latter being in direct communication with the waters of the Loire itself. The difficulty of penetrating this layer of alluvial soil, and of keeping back the floating sand, which would press into the mining shaft with the weight of the waters of the Loire, with which, as just observed, it is in direct communication, had hitherto been considered as insurmountable; and, consequently, the valuable bed of bituminous coal remained inaccessible and unavailable, until M. Triger, in connection with M. de Las Cases, proposed to force the water back by means of condensed air. To accomplish this object, they adopted the following plan:

A cylinder of sheet-iron about seventy feet long, (twenty metres,) and about three and a-half feet (1.033 metre) in diameter, was forced through the sand till it reached the bed of coal. The upper end of this large cylinder is closed by a box, with two valves large enough for a man to pass through; and this contrivance is for the purpose of letting the workmen pass in and out, without allowing the condensed air to escape. The rest of the apparatus consists of air-pumps, which are steadily worked by a steam-engine. By means of the air-pumps, the sheet-iron cylinder and the shaft, which latter commences where the former terminates, are filled with condensed air, which is always kept equal to a pressure of three atmospheres, or equal to forty-four and a-quarter pounds to the square inch, which presses the water back, and keeps cylinder and shaft dry.

Without entering farther into the details of the apparatus or its operation, we think we have said enough for our readers to form some idea of both. Suffice it to add, that the practical results fully answered the expectations, and that the success was complete.

We now come to that part which interests us most, viz., the effect of the condensed air upon the workmen and miners exposed to it; and we regret that this part of the account is as meagre in the eyes of the physiologist, as probably our description of the apparatus would be unsatisfactory to a civil engineer or a miner; for, as we said before, the facts are briefly stated, and we have added the explanatory reasoning without presuming, however, that ours is the only mode of explanation. Others may find a different, and, perhaps, a better theory.

The first phenomenon which was observed when the men entered into the condensed air, was a more or less severe pain in the ears. This pain commences immediately on entering into the compressed atmosphere, and ceases as soon as an equilibrium is established between the condensed air and the air which is contained in the interior of the ear. This explanation appears the more probable, as the pain was easily removed by the act of deglutition. In some of the workmen, this pain in the ears was so slight as to be hardly perceptible, while in others it was very intense. With others, again, it did not exist at all in entering into the condensed air, while it became very severe on leaving it, and getting out into the open atmosphere; the latter case was, however, of rare occurrence. A certain bodily disposition seemed to exert some influence upon the degree of pain which the men experienced, as the same person would one day feel it only very slightly, while at other times, apparently under the same circumstances, the same person would suffer intensely. Besides, the fact was established, that the pain would be lessened in proportion as the transition from the open air into the condensed, and from the condensed into the open air, was slower and more gradual.

Another singular observation which the workmen made was, that nobody was able to whistle in condensed air under a pressure of three atmospheres; but until the condensation reached that point, viz., the pressure of three atmospheres, the men were enabled to whistle. This phenomenon we explain in the following manner: In whistling, we force a stream of air through a small aperture of the lips; and this fluid, in thus passing through this small aperture, becomes condensed, and produces the sound; but under a pressure of three atmospheres, the air is already so condensed that the ordinary effort, which the muscles of the cheeks and lips and the respiratory muscles are accustomed to make for the purpose of whistling, is not sufficient to compress the air any farther; and consequently there arises an inability to whistle. The account we have does not mention anything on the subject, but we suppose there would be a similar difficulty in expelling air *per anum*.

Another fact observed is, that in this condensed air, *every body speaks through the nose*. The following theory may explain this fact: The common expression, to speak through the nose, is a misnomer, being like *lucus a non lucendo;* for the sound becomes nasal, (we speak through the nose,) when, in articulation, the air and sound do *not* pass freely through the nose. Now, as the animal heat in the interior of the nose probably rarifies the air a little on its passage through that cavity, the surrounding air is slightly more condensed than that within the nose; and the pressure from the outside is consequently stronger in proportion to the rarification of the air within the nose. The slightest pressure on the nose is, indeed, sufficient to give to the voice a nasal sound, which we easily perceive by merely laying a finger gently on each side of the nose. On the other hand, it is also possible that this phenomenon is produced, not by the action of the condensed air on the speaker, but on the hearer.

Though we might be led to anticipate some decided effects upon respiration from the exposure of the lungs to this condensed air, the account does not mention any change produced in respiration, except one phenomenon, which we should have least expected, namely, that the workmen, in ascending the shaft filled with condensed air, did not

lose their breath, or did not become short of breath, to the same degree as when making a similar ascent in the free air. The only explanation we can suggest of this fact is as follows: As the same given volume of condensed air of course contains a greater quantity of oxygen than the same volume of uncondensed air, it follows that the lungs require, in proportion to the condensation, a smaller volume of air to effect the oxydation and decarbonisation of the blood; and that they consequently do not require to be extended as much as if they were breathing uncompressed air, nor need the action of the respiratory muscles be as energetic.

May not this fact, if carefully investigated and fully established, warrant the practical application of condensed air as a remedial agent in certain diseases; for instance, in some kinds of asthma, or some affections of the lungs, in which these organs have become partly impermeable to the air, or even in morbus cœruleus? Even if we could not expect to cure those diseases by the breathing of condensed air, yet it might be a means of prolonging life. A small volume of condensed air would introduce a sufficient quantity of oxygen to be mingled with the blood, without the objectionable excitement produced by the inspiration of an uncondensed air, which contains a greater and an artificial proportion of oxygen. We are fully aware that a merely speculative idea, thrown out in this way, is open to a great many formidable objections; and it would carry us far beyond our limits to enter here into a discussion *pro* or *contra* on this subject; but if we mistake not, some years ago a physician in Paris had an apparatus arranged for applying condensed air as a remedial agent, though we do not at present recollect where or whether we ever have seen a satisfactory account of his experiments, nor do we recollect the name of the physician.

The last and most remarkable fact which we find stated in the account before us, among the effects produced by the condensed air upon the workmen, is the following: One of the miners, a man by the name of Floc, who had been deaf since the siege of Antwerp, always heard better in the condensed air than any of the other miners who were not deaf. We regret that we only find this brief statement of the bare fact, without mentioning anything of the nature or cause of the man's deafness, precluding thus any conclusions at which we or our readers might have arrived. It might be that the cause of the deafness was an obstruction of the Eustachian tubes from thickening of the lining membrane, which was temporarily removed by the pressure of the condensed air. But why then should he hear better than any of his companions, who were not deaf, for the comparison which is made seems to imply that the hearing of those who were not deaf became imperfect in condensed air? It must, therefore, have been a cause which, while it affected a sound ear, temporarily restored a diseased organ. May not condensed air act as a stimulus upon the organ of the ear, which, while it is too powerful for a sound ear, excites to action an organ perhaps partially paralyzed, which requires an artificial stimulus,—a result analogous to the fact, that a person suffering from nervous deafness hears better in a noisy place; as, for instance, when riding in a carriage? Or does condensation alter the sound-conducting property of the air? Are the vibrations of condensed air more intense or less so than those of the air when under no pressure?

The account farther mentions some interesting observations belonging to the province of natural philosophy; as, for instance, the increased

rapidity of combustion, which, under a pressure of three atmospheres, increased so that they had to abandon the ordinary candles with cotton wicks, which, burning out in less than a quarter of an hour, made so intolerable a smoke that they had to exchange them for candles with linen wicks, which lasted longer and did not smoke so much. We find, besides, some interesting observations with regard to the temperature of condensed air, and also as to the artificial formation of fog. We will, however, not go beyond our province; but in conclusion we cannot refrain from adding, that in the session of the Academy of Science of Paris, of November 8th, 1841, Dr. Poisenille mentioned some experiments which he had made on the effect of high atmospheric pressure upon animal life. Having exposed salamanders and frogs to a high pressure, he found that it produced no change in the capillary circulation, even when the pressure was equal to seven atmospheres. He observed the same upon some mammalia: having exposed mice and young rats for a whole hour to a pressure of seven atmospheres, or one hundred and three and a quarter pounds to the square inch, he observed that they moved about and fed as usual, as soon as they came out of the pressure into the open air.

ART. VI.—*Medical Statistics of the United States Frigate Potomac, Commodore John Downes, Commander, during a three years' voyage of Circumnavigation of the Globe.* By J. M. FOLTZ, Esq., Surgeon U. S. Navy.

THE United States Frigate Potomac, 44, bearing the pennant of Commodore John Downes, with a complement of five hundred men, performed a voyage of circumnavigation of the globe, during a cruise of three years. During this period she traversed ninety-seven degrees of latitude, that is, from 40° N. to 57° S., crossing the equator six times. A period of nearly two years was passed between the tropics; and it may be here added, as not a little singular, that while three months were spent within 6° of the equator in the East Indies, where a malignant dysentery made its appearance on board, the same period, subsequently, was passed in the same latitudes at the direct antipodes, in the vicinity of the Gallapagos Islands, where, from the absence, no doubt, of marshes, rank vegetation, and consequently of malaria, (notwithstanding these causes are not considered by many essential to the production of malarial diseases,) the crew enjoyed the average health of our own latitudes.

A concise statistical account of the health of the crew, with a brief notice of the character of the diseases developed in the different climates traversed, as well as those resulting from the confinement of so large a body of men on board ship, may not be uninteresting to the profession, as well as to the general inquirer. These, together with some brief observations upon the medical topography of the most important ports visited, are here presented from our notes and journal made during three years of active service and privations at sea, in the hope that they may prove interesting to some comfortably-seated fireside-traveller at home.

In entering upon the details of this voyage, we would bespeak the patient indulgence of the reader, confident that the general deductions, at least, will be interesting to the physician, the philanthropist, and the political economist.

We reported for duty on board the Potomac on the 22d of May, 1831, at which time two hundred and fourteen of her crew were on board. On the day of joining, twenty-four were upon the sick report, consisting of slight cases of indisposition usually encountered among new recruits. On the 3d of June, the ship hauled off from the navy-yard at Washington, to Greenleaf Point, (a distance of two miles,) into deep water; and here her armament and stores were received on board. Throughout the day the crew, exposed to a very hot sun, labored hard and drank freely of the river water alongside. During the night and the following day, many, in consequence, doubtless, to a great extent, of the impurities of the water drunk, were seized with cholera morbus, accompanied with violent spasms, which, in several robust young men, required copious venesection; but the disease readily yielded to treatment. As the ship was immediately after watered and no more cases occurred, its relation with the river-water seems the more obvious. The sick list was increased from twenty-two to thirty-six in one day, in consequence, no doubt, of this indulgence in the use of the river-water.

On the 15th of June we left Washington for Hampton Roads, where we arrived on the 22d. The change from a fresh water river to the waters of the bay, materially improved the health of the crew, several cases of vernal intermittents having been speedily cured. The sick list, for the number of men on board, continued large, having a daily average of twenty-three during the twenty-four days that we remained at Norfolk; and this high ratio was kept up by the new drafts of men, who came on board after the most violent debauchery and dissipation. A very valuable seaman, who had been appointed boatswain, visited the shore on the 4th of July, to congratulate himself upon the receipt of his warrant; and after three days' absence, he was brought on board laboring under mania a potu and hæmoptysis, which proved fatal on the third day after his return.

On July 16th, we sailed for New York, with three hundred and fifty of the crew on board; and in five days we anchored off the battery, in the harbor of that city. The full complement of the officers and crew having been here made up, and all the supplies furnished, the Potomac sailed, on the 24th of August, 1831, with five hundred and two souls on board. All were in apparent good health, excepting one officer, affected with tracheal phthisis, whose case will be noticed in the sequel. The average age of the crew, as near as could be ascertained, was thirty-one years.

In our passage toward the equator, we did not encounter the north-east trade winds, those of a variable kind and light airs having prevailed until we reached the third degree of north latitude; and here we met the south-east trades, which continued, with uniform regularity and force, until our arrival at Rio de Janeiro. After passing the Cape de Verd islands, our course for eight days was parallel with the coast of Africa, distant four hundred miles; and here we encountered the most violent rains, accompanied with thunder and lightning, a high temperature, and thick, sultry, disagreeable weather. Several cases of remitting fever presented themselves in these latitudes, but they did not assume a violent form. On the 6th of October we crossed the equator; the thermometer was 79°, with fresh trade winds, and cloudy weather; and twenty-eight were on the sick report. The passage from New York to Rio was made in fifty-three days; and during this time, the mean

elevation of the thermometer at noon was 76°. Twelve cases of fever occurred, and ten were treated for injuries. Of the younger part of the crew, who had not been to sea previously, many suffered much from the confinement on board ship and the change of diet; and several obstinate cases of sea-sickness continued throughout the passage.

During our stay of twenty days in the harbor of Rio, the crew were freely supplied with fresh provisions, and were permitted to indulge without restraint in the delicious tropical fruits, which were very abundant. The mean of the thermometer at noon was 76°, that of the barometer 29.70 in., and the daily proportion on the sick report was seventeen.

The harbor of Rio is in 22°30′ south latitude, just within the tropic of Capricorn. It is equally unrivalled for its extent, its numerous deep bays, and its incomparable scenery; and notwithstanding its intertropical location, it is exempt from malignant diseases, the yellow fever being there unknown. It also escaped the ravages of that dreadful scourge, the cholera epidemica. The inhabitants, however, far from enjoying vigorous health, are of a bilious temperament, feeble, and short-lived. Cutaneous diseases prevail to a great extent, and the streets are crowded with beggars suffering from leprosy and elephantiasis. Ships of war that remain a long period in this port usually have large sick lists, consisting, in a majority of cases, of diseases of the alimentary canal. Chronic diarrhœa is here very insidious in its invasion, and often terminates in incurable ulcerations. The rainy season is the most healthy, but ships' crews cannot be too carefully sheltered by awnings from the sun and rain; and they should carefully abstain from the unripe fruit, which is brought off in great quantities by the bomb-boats.

Having sailed on the 5th of November for the Cape of Good Hope, we anchored in Table Bay on the 6th of December, after a passage of thirty-one days. The passage was boisterous, with much rain and thick foggy weather; the easting was made between the 32° and 34° of south latitude, strong westerly winds prevailing; and the thermometer averaged near 60° at noon throughout the passage. Forty were admitted with dysentery and diarrhœa on the passage; and of these most occurred immediately after leaving port, and required treatment until our arrival at the Cape. The average number on the sick report during the passage, was twenty-one. The cold and wet weather induced a return of intermittent fever in twelve, who had had previous attacks; but the disease readily yielded, after our reaching Table Bay, where intermittents are of rare occurrence.

The mean annual temperature at the Cape of Good Hope is about 68°, and the climate appears to be very favorable to health, in both natives and foreigners. Instances of longevity are numerous in the various races of men met with here, among whom are the Caffres, Hottentots, African Dutch-boors, and the English residents. The bills of mortality exhibit all the variety of disease to be met with in the same latitude north, while the violent and fatal diseases of warm climates are unknown. Invalids from British India often resort to this place for the restoration of health, many of whom, as we were informed, derive much benefit from the change.

In 1833, according to the British army statistics, the deaths were only six hundred and eighty-one out of a population of thirty-one thousand one hundred and sixty-seven, being one in forty-six, while in England,

according to the last census, the proportion was one in forty-seven and one-half. When it is considered that among the deaths at Cape Town, many were invalids who arrived there in the last stage of disease, and moreover that in some of the neighboring districts, the mortality for 1833 was only one in sixty-seven, which is a lower ratio than in the healthiest counties of England, it is obvious that, so far as regards the resident population, the climate is certainly not less favorable to the constitution than that of Britain. Among the British troops serving here, nearly two-thirds of the admissions into hospital are of that description which seldom prove fatal. Of the more serious diseases, the following is the order of their prevalence:—those of the stomach and bowels, those of the lungs, fevers, rheumatic affections. Intermittent and remittent fevers are extremely rare, they being, it is said, entirely unknown among the native inhabitants. In pulmonary affections, the climate is regarded as decidedly favorable.

Southeast winds prevail here, and frequently blow with great violence; and when this occurs, they are accompanied with a remarkable phenomenon, viz.: a small stationary cloud, which hangs over Table Bay, in the midst of the most violent tempest. Table Mountain and the white sandy beach of the bay, form the section of an amphitheatre, upon which an African sun glows with intense ardor; and from this heated surface, a highly rarified air ascends, until it attains the elevation of Table Mountain, when it comes in contact with the south-east winds, surcharged with humidity in their long passage over the Indian Ocean; and as the dew-point is thus suddenly reached, the cloud in question is formed; but, as it gradually attains the temperature of the surrounding atmosphere, the humidity is again absorbed, so that there is a constant generation and destruction, in the midst of a tempest, of this remarkable stationary cloud. While the Potomac remained, the mean temperature at noon was 78°.

On the 12th of December we sailed from Table Bay. Immediately after doubling the Cape we encountered a violent gale from the west; and a rough sea, and cold, wet weather, with westerly winds, continued until we made the island of St. Paul's. Several cases of pleuritis occurred, and many suffered from catarrh and rheumatism up to this period.

From the Island of St. Paul's, our course was northeast to Quallah-Battoo on the west coast of Sumatra, where this ship had been ordered to redress a piracy and murder, committed upon the ship Friendship of Boston. The crew were formed into division, and exercised whenever the weather would permit, in the use of fire-arms and the cutlass, to prepare them for the landing among these piratical and treacherous Malays; and such was the excitement upon the subject, and the anxiety of all to participate in the affair, that the sick report was smaller during the passage of fifty-one days, than at any other period of the cruise. The daily proportion sick was ten; and upon our arrival at Quallah-Battoo, but three were unable to attend to duty, out of a crew of more than five hundred. The equator was crossed on the 27th of January, the thermometer being at 76°, with steady fresh south-east trade-winds; and on the 5th of February, we anchored off Quallah-Battoo.

On the morning of the 6th, the attack was made upon the town, dismantling and destroying three forts, by which we had eleven wounded and two killed. In one of the wounded, the ball traversed

the right lung, entering on the right of the sternum, at the sixth rib, and passed out under the scapula, having carried with it pieces of his belt, cloth jacket, and shirt. The hæmorrhage from the lungs was relieved by copious venesection on the spot where he fell. He continued to improve slowly; and after the foreign substances mentioned above were discharged by means of an abscess in the right side, he recovered with a collapse of the lung. Nearly all the wounds were severe, and several were dangerous; but from the comfortable quarters on the gun-deck of the frigate, and the uniform temperature of the atmosphere, they all recovered with unusual rapidity. We remained twelve days, during which time the thermometer stood at 85°, at meridian of each day, with alternate land and sea breezes. The severe exertions of the crew at the time of the attack on shore, and the necessary subsequent labor and exposure in watering the ship, after a long period of light duty, produced a material change in the health of the crew; and this was promoted by the absence of excitement which had for a time prevailed among all, and perhaps also by causes of a climatic nature. The sick list of three, in one month, increased to fifty-seven. Fifty-two cases of disease of the bowels and twelve of bilious fever, were treated within the month, notwithstanding fresh meat and vegetables were daily served to all hands, and every precaution was used to protect the men from the sun.

We have here a confirmation of an extraordinary fact, recorded in the "Statistical Report on the Sickness and Mortality of the Army of the United States," embracing the period from 1819 to 1839:—

"It is, indeed, a remarkable fact in the medical history of fleets and armies, that, during the active progress of warlike operations, troops are little subject to the influence of disease. It seems as though the excitement of the passions has the power of steeling the system against the agency of morbific causes. On the contrary, as soon as the excitement is withdrawn, by a cessation of operations and a return to the monotony of a garrison, the constitution manifests the consequences of recent fatigue and exposure."

The Malays in this vicinity, which is in 4° north latitude, are healthy and robust, compared with their Asiatic and Javanese neighbors. They are very temperate in their habits, use but little animal food, and, like all Mahomedans, bathe frequently. Our numerous merchant vessels which have for years visited this coast, engaged in the pepper trade, enjoy comparative health, and apprehend but little danger when on the coast of Sumatra; while the shores of Java and Borneo, on the contrary, are shunned as we do a pest-house.

The topographical configuration of the west coast of Sumatra will readily account for its salubrity. Bold hills and spurs of mountains extend down to the sea; and although nature here revels in perpetual verdure, and there is a constant decay of vegetable matter, yet there are no fens and marshes, the mountain streams being precipitated with rapidity to the sea. Mount Ophir of Solomon is directly inland from this port, being distinctly visible whenever the atmosphere is free from clouds. We met with many of the natives who had suffered recently from small pox; and goitre was very common among them,—a disease which here at least cannot be attributed to snow-water as the exciting cause, for snow never falls even upon the mountains. On the 16th of February, we sailed from the west coast of Sumatra, and crossed the

equator on the 20th, with the thermometer at 85°. On the 25th, the sick list was again reduced to thirty, no new cases of diarrhœa having been admitted since leaving port; and the wounded were all doing well.

On the 28th, we anchored in Bantam Bay, on the northwestern extremity of Java, just within the Straits of Sunda. A change was here made in the ration by order of Commodore Downes, which contributed materially to the preservation of the health of the ship's company. Portions of the beef, pork, and beans, which constitute the navy ration, were discontinued, and rice and curry served out in lieu of them. The spirit ration was divided into three portions, one of which was given in the morning, one at noon, and the other in the evening. All hands were ordered to wear flannel; and they were daily inspected at quarters by the officers, to see that the order was complied with. At Bantam Bay, we remained twelve days, wooding and watering ship; and during this period, the mean temperature at noon was 82°, with the regular land and sea-breezes, and several showers every day. Fifteen cases of dysentery and four cases of fever, were admitted upon the report, with a daily average of twenty-nine sick during our stay.

On the 19th of March, we arrived at Batavia; and with a hope to preserve the crew in good health, we anchored four miles from the shore. This port has been more fatal to navigators than any other on the globe. The largest and most valuable Indiamen have often here been laid up for want of hands to navigate them, and here entire ships' crews have found their graves. It was in this port that Dr. James Johnson encountered the malignant fever which committed such dreadful ravages in the English squadron in 1806, and which forms the basis of his invaluable work upon the diseases of tropical climates. As we were consequently not without the most dreadful forebodings, we adopted every precautionary means of prevention that had heretofore been found useful. Awnings were spread over the ship day and night, —native Javanese boats' crews were employed to do the necessary boat-duties of the ship,—the men were carefully sheltered from the sun; in a word, all unnecessary duty was avoided. Those officers who visited the shores, spent as little time as possible in the city. They went directly into the country, where a purer atmosphere prevails, and they strictly observed the most rigid temperance.

To Dr. Johnson we were much indebted for many valuable hints on prevention; and after the occurrence of disease, we were enabled at once to pursue a course of treatment, with the result of which we had much occasion to be highly gratified. Indeed, to him we acknowledge professional obligations, which it will ever be out of our power to repay.

There was but little variation in the temperature during our stay at Batavia, and the regular return of the land and sea breeze prevented the heat from becoming oppressive; the mean at noon was 82°. When the land breeze first reached us in the evening, it was charged with the most offensive effluvia from the fens and marshes, which stretch along the shores; and although anchored four miles from the land, this noxious atmosphere was so oppressive, that all on board complained much of it. This malaria doubtless brings with it the seeds of the diseases from which strangers suffer so much.

The city is situated in 6° of south latitude, and is intersected by dykes

and canals, to which the Dutch settlers are so partial, and which materially contributed to its insalubrity. The walls which formerly surrounded the town were removed, when in possession of Great Britain, by Sir Stamford Raffles; and the city, at the same time, was extended to the higher and more healthy grounds beyond, where at present the foreign merchants and residents are congregated. The governor and Dutch troops are stationed in the interior, where the climate is less noxious to strangers; but a few years' residence in Java is sure to be followed by physical and mental enervation.

Notwithstanding our precautions, the number of sick daily increased, those reporting themselves sick suffering from a severe form of dysentery accompanied with much inflammation, tormina, and tenesmus. In several cases, the disease assumed a most malignant character from the commencement; and in one case, a robust, vigorous, young man, it terminated fatally within twenty-four hours from the time of its accession. Copious blood-letting, local and general, was ordered in the commencement, and emetics administered to counteract the great tendency to visceral congestion, and to restore a healthy action to the deranged functions of the skin and liver. Mercurials in combination with opium and ipecacuanha were regularly administered, and frequently with the most favorable results; and in conjunction with this, mercurial inunctions were used, to accelerate the action of the mercury; and when ptyalism occurred, the patient in almost every instance was relieved, notwithstanding it did not in every case prevent a fatal termination. When this course of treatment did not arrest the progress of the disease within a few days, bloody fœtid evacuations followed, with gangrene, collapse, and death.

On the 10th of April, in consequence of the increase of sickness, we sailed from Batavia with forty-two cases of dysentery on board. On the 20th, we crossed the equator, the thermometer being at 90°, and the sick report increasing. On the 21st, at meridian, at anchor one mile north of the equator, the weather calm, and the thermometer at 85°, fifty cases of dysentery were on the report, and new cases occurring daily. Chloride of lime was used freely about the cots and hammocks of the sick, and every possible attention was paid to cleanliness. On the 1st of May, three deaths occurred within the preceding twenty-four hours; but the number of cases was reduced to thirty-four, and no new ones had appeared within several days. Since leaving port the thermometer averaged 84°, with calm and light airs. After being at sea twenty days, we had sailed but six hundred miles, with a vertical sun, being, indeed, almost directly under the equator. On the previous night, we experienced the most tremendous thunder, lightning, and rain, without wind; and on the following morning, we had a light breeze which continued until our arrival at Canton, after a passage of thirty-nine days. From this time, the health of the crew continued to improve. One hundred and fifty cases of dysentery were registered within a few weeks, among which there occurred but thirteen deaths,—a proportion truly small, when compared with the number of fatal cases on board other ships in the China seas.

The Potomac remained at the Island of Lintin for nineteen days; the mean temperature at noon was 80°, with a fresh sea breeze which thoroughly ventilated the ship. The average number on the sick report was twenty-six, three-fourths of whom had chronic dysentery, and six

suffered from bilious fever. The Lintin fleet, which remains at anchor here for many months at a time, usually enjoys good health; but dysentery and fever, during some seasons, prove very fatal. Although the native Chinese appear to suffer but little from the epidemic diseases, yet they are but a feeble and enervated race. We were informed by a resident American surgeon, that he had frequently met with cases among the natives, in which fractures would not unite; and ulcerations are also extremely difficult to heal, in consequence of this debilitated state of the vital powers.

Ships going to the East Indies cannot be too careful in enforcing the regulations adopted on board the Potomac; for, we were thereby enabled to carry a larger number of men in safety through those seas, than had probably ever before been accomplished. The less animal food consumed, the better; and the entire abolition of the spirituous portion of the ration, would, we are satisfied, be also attended with much benefit in these excessively hot climes.

We sailed for the Sandwich Islands on the 5th of June, with thick heavy weather and a fresh breeze. On the ninth, during a typhon, with the thermometer at 80°, there were two deaths from chronic dysentery. The easting was made between the 34th and 36th degrees of north latitude, with strong westerly winds and cool wet weather, which completely changed the character of the diseases on board. Pleuritis, intermittents, and inflammatory affections, took the place of dysentery; but they were not of an aggravated character. Twenty-five was the average on the sick report for the passage.

We arrived at Oahu, Sandwich Islands, on the 23d July, after a passage of forty-eight days; and here we remained for twenty-three days. During this period, the mean of the thermometer at noon was at 78°, and that of the barometer 29.90 in. The crew were here granted liberty—"a run on shore,"—which was much enjoyed; and it was followed by a much smaller increase in the number of sick, than generally ensues from liberty in a port which has greater facilities for dissipation and intemperance. On the day of entering the port, seventeen were under medical treatment, and at the time of sailing, twenty-two, which is a very small number in view of the largeness of the crew.

The Sandwich Islands are situated in 20° north latitude. The climate appears peculiarly favorable to the human constitution; for the natives are extremely large and corpulent, and such as are accustomed to labor, are possessed of great strength. This tendency to corpulency is much encouraged, particularly in females, in whom it is considered the greatest evidence of beauty; and to this result, their native food, the *aurum maculatum*, or wake robin, is said to contribute in an especial manner. This plant, which is cultivated with care, contains a large portion of fecula, from which they manufacture starch, made into *poye*, which, eaten with *raw fish*, is considered one of their greatest luxuries. The natives suffer much from a species of leprosy, which they call the *craw-craws;* and to cure which, they undergo a course of treatment with the *kavaroot*,—a powerful alterative and narcotic. Upon the arrival of the missionaries, infanticide was of very frequent occurrence. To effect this purpose, they used a drastic, purgative, indigenous bean, which not unfrequently destroyed the mother, and seldom failed to produce abortion; but this horrid practice, through the salutary influence of the missionaries, has been in a great measure discontinued.

We sailed for the Society Islands on the 15th of August, and crossed the equator on the 5th of September, in 5° west longitude, with the thermometer at 80°, and the south-east trades. At this time there were twenty-four on the sick report. Twelve cases of intermittent fever were admitted during the passage; and many of those laboring under dysentery continued to suffer upon our approach to the equator, from chronic diarrhœa. A few degrees north of the equator we met with calms and heavy rains, with the thermometer ranging above 80°, when these cases of relapse occurred. On the twenty-eighth day we anchored at the Island of Otaheite, having an average of twenty-seven under treatment for the time at sea. At this island the crew were much on shore, wooding and watering ship, the tropical fruits were procured in the greatest abundance, and no unpleasant consequences resulted from their use. We lost one of the crew while in this port, from concealed strangulated hernia. This island, which is in latitude 16° south, consists in its interior of high volcanic mountain land, surrounded by a fertile belt of rich alluvial deposit near the shores. The climate is truly delightful, and all the wants of the natives are supplied by the spontaneous productions of nature. The natives have not so great a stature as those of the Sandwich Islands; but they are more gay and cheerful in their character, and many of the females are delicate and graceful. A light complexion is much esteemed among them, to improve which they avoid the sun, and bathe themselves with the juice of the *papa*, which is an indigenous plant. Their diet consists of fresh vegetables, fruit, and fish, of which the bread-fruit constitutes the principal; and as all the tropical fruits are here produced spontaneously, labor is unnecessary, and their lives are consequently inactive and indolent. The Missionaries who remain some time in the Society Islands, seldom escape an attack of elephantiasis. We met with two who suffered from this disease in a most aggravated form. The natives also suffer much from this affliction.

The passage between Otaheite and Valparaiso in Chili was made in the vicinity of the thirty-fifth degree of south latitude; and as it was in the winter of the southern hemisphere, much colder weather was encountered than we had previously met with, accompanied with rain, wind, and a rough sea. The ship was exceedingly uncomfortable, and the change of weather once more completely revolutionized the type of disease. Fifteen cases of pneumonia and pleuritis, with twenty-two cases of rheumatism, were admitted upon the sick report. Milder forms of catarrh and inflamed tonsils were numerous, and the general liability of the crew to indisposition, upon exposure and bad weather, indicated that all began to suffer from the long period passed at sea. After a passage of thirty-four days, we arrived at Valparaiso, having had an average of thirty-six patients, who required careful treatment during the voyage. Besides, many had been excused from duty, from time to time, in consequence of slight indisposition, but who were not placed on the sick report. Among the number sick on this passage were two cases of scurvy, which did not manifest themselves until we came under the influence of the land air. The first few days in port aggravated the disease, but as the symptoms were mild, the patients speedily recovered; and these were the only cases of scurvy which presented themselves during the cruise. The Potomac arrived at Valparaiso, which is in the same longitude with New York, on the

twenty-fourth of October, 1832, having been fourteen months from the United States, nearly twelve of which had been passed at sea.

Soon after arriving, liberty was given to the crew, which, as usual, for a few days, more than doubled the number on the sick report. Eleven were treated for mania a potu, and many contracted syphilis. We remained forty days in port, during which time the crew were freely supplied with fresh provisions, and were allowed relaxation after a long period of active service at sea. The mean of the thermometer at noon was 66° and that of the barometer 29.75 in. This is here the season of spring; high winds prevail from the south, without rain. The number sick averaged nearly forty for each day in port, a majority of them suffering from the effects of the cruise on shore, and the consequent dissipation.

Valparaiso, which is in 33° south latitude, is surrounded by spurs of the Andes, which run down in bold bluffs to the sea. The climate is one of the most salubrious in the world; and to the early Spanish conquerors, who reached it after their invasion of Mexico and Peru, where they suffered much from the intense heat and arid soil, this port was so enchanting that it received the name of the "vale of Paradise." Santiago, the capital of Chili, is ninety miles inland, at the foot of the Cordillera, with a population of nearly fifty thousand. The capital is remarkable for sudden vicissitudes of temperature, the days being very hot, while the nights are cold. This is occasioned by the snow-clad mountains near the city, the cold atmosphere from their summits descending into the highly rarefied atmosphere of the plains below. Remittent and intermittent fevers are very common, as well as rheumatism, and the whole class of phlegmasiæ, which invariably result from extremes of heat and cold. Goitre is frequently met with, every individual in some families being affected with it,—a disease which the natives, as in Switzerland, attribute to the use of the snow-water from the mountains, which supplies the town; but this explanation would surely be laughed at by the patients affected similarly, that we saw in the island of Sumatra. The various preparations of iodine have been found very efficacious in its treatment. While at Santiago we heard of a case of extirpation of the thyroid gland, which resulted in the death of the patient.

On the second of December we sailed for Lima, with the usual south wind, and arrived at Callao on the fifteenth, the sick report having been reduced to eighteen. We remained in this port for seventy-five days, during which period the ship's hold was broken out, and every part thoroughly cleaned and painted. The weather was uniformly clear, with a most delightful south wind; here it never rains, and at this season, mists and fogs are equally unknown; the mean of the thermometer at noon was 70°, and that of the barometer 29.85 in., with a daily proportion of twenty-four upon the sick report. Four cases of remitting fever were treated; there was but little arterial excitement, with much disturbance of the nervous system, and it was found that they would not bear the use of the lancet.

The city of Lima, which is in 12° south latitude, is eight miles from the bay. The inhabitants, although much enervated by the continued high temperature, and their dissipated and indolent lives, leading to premature old age, yet enjoy good, if not robust, health. Although foreigners suffer less from acute diseases than in India, yet they are insidiously worn down by the climate, notwithstanding the most extreme

temperance and regularity in living. The streets of Lima are kept very clean, many having streams of water running through them; and to this must be added, as an additional cause of their exemption from malignant disease, the remarkable property of the atmosphere in producing dry putrefaction, which thus prevents all noxious effluvia. Dead animals are suffered to remain in the roads; and the Pantheon, in which all the dead of the city are interred, notwithstanding open to the air, never emits the least disagreeable effluvia. This property of the atmosphere arises from the large quantity of nitrate of soda diffused through it, from the soil, and which in situations that have not been disturbed for a long period, may be found deposited in small crystals. The long chain of the Andes, which forms the immense barrier along the entire western coast of South America, with an elevation of from twelve to eighteen thousand feet, completely interrupts the progress of the winds from the east, the only direction from which they blow along the coast of Peru, being from the south; and as these south winds are much colder than the air they encounter in their progress towards the equator, and as their capacity for humidity consequently continues to increase, it follows that rain cannot form. Rain is consequently unknown in these countries; but as the winds reach the Isthmus of Darien, the air becomes surcharged with moisture, which is there precipitated in torrents.

Our ships of war pass much time in this port, with generally a large sick report. Dysentery sometimes prevails to a great extent, and during the months of July and August, when fogs prevail, those predisposed to tubercular phthisis are liable to have the disease developed. We here lost one of the crew from consumption; and an officer from the U. S. Ship Falmouth, who was seized with hæmoptysis, was transferred to the Potomac, in the hope that a change to Valparaiso would be of service; but the case terminated fatally soon after our return to Chili.

On the twenty-eighth of February, 1833, we sailed for Valparaiso, which we reached in sixteen days, after a cold, wet, and boisterous passage; the mean of the thermometer was 64°, and the average number on the sick list was twenty-three. We remained in port sixty-seven days, during the months of March, April, and May, (these being the autumn months in Chili), with much colder weather than at the time of our previous visit. In May we had two severe northers, which, as the harbor is open to the north, are dangerous; and both were accompanied with rain. These northers, which are always indicated by the barometer, only occur at this season. The average on the sick report during our stay, was twenty-one; and this number was kept up in consequence of the liberty given to the crew on shore. Several cases of pleuritis, rheumatism, and inguinal adenitis, occurred in consequence of the exposure and the wet ship. At Lima, cases of chronic diarrhœa presented themselves, which were relieved soon after a change to a cooler climate.

On the twenty-fifth of April, a case of small-pox occurred in one of the servants, who contracted the disease on shore. As soon as the character of the affection was ascertained, the patient was transferred to an hospital on shore, to prevent its extension. Within a few days, another case made its appearance, and this was followed by a third, all of whom were sent on shore. On the first of May, during a norther, he thermometer fell to 40°, there being now a large sick list, composed

chiefly of inflammatory affections. During our stay, fourteen were upon the report with scrofulous affections, twenty-two with pulmonary and hepatic inflammation, and sixteen with rheumatism. Four weeks having elapsed since the appearance of the last case of variola, it was thought that the disease had disappeared, and we consequently, on the twenty-second of May, sailed for Coquimbo, which we reached in three days; but on the eleventh of June other cases of variola presented themselves, which placed beyond a doubt the fact that the contagion was on board ship, and that it would inevitably extend throughout the entire ship's company. It was now determined to inoculate the whole ship's company, as we would thereby materially diminish the severity of the disease, and accelerate its progress throughout the ship; for, as long as it continued on board, we were subject to a most irksome quarantine. On the twentieth, all hands were called to muster; and beginning with the officers, every individual who was not marked with the small-pox was inoculated with lymph taken from a well-developed case on board. The number inoculated was two hundred and eighty-seven, all of whom had their grog stopped, and were daily furnished with fresh provisions. At this time the general health of the crew was very good, having an average of but eighteen on the report, exclusive of those suffering from small-pox.

Eighty-five of those inoculated took the disease, many of them having it in a very mild form. When there was a tendency to inflammation, or the febrile action ran high, venesection was ordered with small and repeated doses of the sulphas magnesiæ. The solution of supertart. potassæ was given as a common drink, and a low diet prescribed. In eleven cases, the eruption extended over the body; but in no case did it become confluent, nor was it accompanied by any unfavorable symptoms. The febrile excitement was most severe on the eleventh day after inoculation, from which time it gradually subsided. Thirteen of the crew were without any evidence of previous vaccination, all of whom took the disease from inoculation; and the eighty-five who became effected in this way, were consequently all susceptible to its influence.

While here in quarantine from small-pox, the American whale-ship "Corinthian," entered the port with this disease on board. There were three cases, two of which terminated fatally soon after her arrival. The remainder, twenty-seven, we inoculated, eleven of whom took the infection and recovered in proper time, without any unfavorable event. Of the three who took the disease in the natural way, two died, while eleven with the disease by inoculation, all recovered,—a result which presents strong testimony in favor of inoculation.

Coquimbo is very healthy, and it has a remarkable uniformity of temperature throughout the year. The city, eight miles from the landing, was called, by the old Spaniards, from the serenity of its atmosphere, La Serena, and it was selected, for the same reason, by the proprietors of the silver and copper mines, as their residence. To this purity of the atmosphere and uniformity of temperature, together with the careful inoculation of all on board, may be attributed the good fortune of not losing a man out of so large a crew, from this terrible disease. The average on the report, exclusive of the cases of variola, was nineteen; the thermometer averaged 69°, and the barometer 29.80 in. There had been no rain at Coquimbo for three years previous to our arrival, but while there we had several showers.

The cases of small-pox had so far improved by the eighth of July, that the Commodore was enabled to put to sea, with the usual south wind, which in eight days carried us to Callao. On the twenty-second of August we sailed from Callao, having passed thirty-five days in port; and during this time, the thermometer at noon averaged 71°, the barometer 29.77 in., and the daily ratio of the crew under medical treatment was twenty-eight.

This period is here the midst of the season of fogs and mist, when the atmosphere is continually obscured; and now is the time when the prevailing diseases of dysentery, fevers, and pulmonary affections, are rife. Several of the crew were down with remitting fever, which was insidious in its approach, accompanied with great prostration and a small and frequent pulse. Dr. Ruschenberger, the surgeon of the Falmouth, who had seen much of this disease on this coast, found the best treatment to consist in mild saline diaphoretics and regimen. Many of the crew suffered from an enlargement of the inguinal glands, which appears peculiar to the coast of South America, and in which suppuration, notwithstanding every care and attention, will follow. These cases of adenitis are unconnected with syphilis, and are extremely difficult of treatment on board ship. In three days we anchored at Payta; and here, although so short a distance from Callao, where we had recently been enveloped in fogs and mists, we found the atmosphere perfectly serene, with but little difference in the thermometer between day and night.

After a short stay, we sailed for the Gallapagos Islands; and on the first of September we anchored in Essex Bay, Charles Island, 1° 13′ south latitude. This entire group of islands is of recent volcanic origin, one or more cones of craters being found on every one; and as regards soil, little has as yet accumulated to sustain the scanty vegetation. Until recently these islands have been uninhabited, the one at which we were anchored having a few people. The crew were much on shore, collecting the immense terrapins, for which these islands are celebrated; and notwithstanding the great labor of carrying these large animals over the broken lava, under a vertical sun, they remained in good health. It was in this port that Commodore Porter recruited his men, and procured fresh provisions during his cruise in the Essex in the last war. American whale-ships resort much to these islands for the same purpose, an additional inducement being found in the circumstance that the sailors are here unable to procure ardent spirits, and there is no danger of desertion. During the ten days that we remained in port, the mean of the thermometer was 73°, that of the barometer 29.90 in., and the average on the sick report, including several cases of dysentery, was twenty-one. All those here attacked with dysentery, had suffered from the same disease when at Batavia, the antipodes from our present position.

From the Gallapagos Islands we proceeded to Guayaquil, anchoring on the eighth day, at Puna, at the mouth of the river, in 2° south latitude. The crew were much predisposed to disease of the intestinal canal, particularly those who had previously suffered in the East. The number of cases of dysentery continued to increase, with acute inflammatory symptoms, tormina and bloody evacuations; but the disease did not assume that malignant type, nor was it so difficult of treatment as that of Batavia. Among thirty-eight cases of dysentery

and diarrhœa treated since our arrival in the vicinity of the equator, but two terminated fatally. Within the month, when in the same latitudes, eight cases of chronic hepatitis came upon the sick report, which yielded to mercurial alteratives, and the nitro-muriatic acid administered internally and by baths. While at Puna, the average on the report was thirty-two, a majority of whom were seriously unwell, and required much careful attention. Guayaquil is at all times very unhealthy, particularly during the rainy season, which continues several months. The quantity of rain that falls is very great; but as we could not ascertain that any rain-gauge had been kept, we are unable to give the quantity.

On the 28th of September we sailed for Payta, which was reached in three days, having now twenty-eight upon the sick report. A few days in this truly delightful atmosphere again reduced the number of sick to fifteen, which consisted of the convalescents with dysentery and diarrhœa. The climate of this port is one of the most salubrious on the coast of Peru, it being remarkable for uniformity of temperature, dryness of the atmosphere, and the regularity of the winds. The mean annual temperature is about 72°, and the mean of the barometer is 29.90 in.; and here the dense fogs of Lima, and the heavy rains of Guayaquil, are equally unknown. Payta is the port of Piura, a city with a population of four thousand, twenty miles inland on the Colon river. This river passes through marshes filled with the *sarsaparilla*, from which the waters are imputed to imbibe medicinal virtues, which, together with the salubrity of the atmosphere, makes this place the resort of invalids from the neighboring country. The sarsaparilla forms an important article of exportation.

The cruising grounds for the American ships employed in the sperm whale fisheries are directly off this port; andthey frequently resort here for supplies, particularly for fruits and vegetables, as antiscorbutics, for which, in their long cruises, they are much in need. At the head of the list of antiscorbutics, among the whalers, stand raw potatoes; two are served out daily to each man, and eaten raw with vinegar, which, after a long confinement to salt provisions, are much relished by all hands. Those only who have been much at sea can know the longings for, and the luxury of, fresh vegetables of any description.

October 10th, we sailed for Lambayeque, where we touched on the 16th, and proceeded thence to Callao, which we reached on the 27th of the month. In our progress south the thermometer fell, and we again encountered the fogs and mists, which, for a time, we had left behind. At the period of our arrival, the sick report was increased to forty, the mean of the thermometer at noon, for the passage, being 62°. We remained twenty-seven days at Callao, the thermometer having a mean of 69°, and the barometer of 29.65 in., with an average of thirty upon the sick report, including several cases of scrofulous glandular affections, which are here found to be very obstinate.

On the 21st of November, we sailed from Callao, having at different periods of the cruise, spent one hundred and twenty-seven days in this port. The average number under treatment was larger here than at Valparaiso, consisting of cases of disease of the intestinal canal, and the obstinate cases of adenitis to which we have already alluded. In a few cases, where constant rest could be maintained, the use of the pediluvium and evaporating lotions, would effect a resolution; but these cases were rare; suppuration usually ensued, when for weeks and months we had

to contend with indolent ulcers. The average number sick in this port during our visits at various seasons, was thirty-two.

The Limaians, the descendants of the Spanish conquerors, are rapidly decreasing, and promise, in their continued revolutions, soon to become extinct. They have uniformly lived in great luxury, as the proprietors of the valuable gold and silver mines; and for generations, they have been devoted to gambling and dissipation, which have rendered the present race short-lived and feeble. They are diminutive in stature, slight in form, and many of the females, when young, are exceedingly beautiful; but from the premature development of a warm climate,—a law which recent investigations show to have been much exaggerated,—they often become mothers at an early period, and consequently rapidly decline into premature old age. The native Peruvians, who at this time constitute seven-eighths of the population of the country, are short, with very large chests, and broad Chinese features; they are fond of agricultural pursuits; and as they were originally conquered by a mere handful of Spaniards, they still permit themselves to be governed by the same.

We would here respectfully, as a traveller, insert our protest against the declaration of our learned and distinguished countryman, Dr. S. G. Morton, who, in his elaborate volume upon the Crania of America, speaks thus:—"The concurrent testimony of all travellers goes to prove, that the native Americans are possessed of certain physical traits that serve to identify them in all localities, the most remote from each other, nor do they, as a general rule, assimilate less in their moral character and usages." In craniological formation, as well as in his moral character and usages, the Peruvian differs widely from his warlike and intellectual neighbor of North America. The physiognomy is entirely different, possessing but little intelligence, and being totally devoid of the noble intellectual expression of our northern Indians. Temple, who passed years among them, says that they resemble the Tartar or Chinese; and Burrow, who has written so ably upon their country, expresses his conviction of their descent from the Chinese; and as regards the native Mexicans, many of the most accurate observers,—as for instance, in the recent able work of Madame Calderon de la Barca,—advance the same opinion respecting their origin. Between this nation and the Peruvian, there is a close approximation in physical formation; and as regards habits and character, they are found precisely to correspond. The phrenological organization of the native Peruvian indicates but little intellectual development, while at the same time their animal propensities are also diminutive; and these indications are strongly corroborated by their habits and character. When left to themselves, unlike our northern Indians, they diligently cultivate their fields, live amicably with each other, and are hospitable and friendly. The striking analogy among the four hundred dialects of America, it is true, strongly confirms the opinion of a common origin, pertaining to all the American tribes; and all the differences found to obtain among them, may possibly be due entirely to the agency of climate and other causes. But these differences, physical, moral, and intellectual, are certainly much more strongly marked than the language of Morton, just quoted, would at all justify.

We arrived at Valparaiso in twenty-five days, having encountered calms and adverse winds, with an average of twenty-six under

treatment, for the passage. Off the island of Juan Fernandez we encountered a gale, with the thermometer at 50°, which brought on several cases of pneumonia and pleuritis. Six cases of hepatitis were treated at sea; and as we approached the coast, the cold air from the snow-clad Andes brought on catarrhs and colds, from which few escaped. A few days in port restored the crew to health, as the weather at this season is dry and temperate.

We remained fifty-three days in Valparaiso, with an average of eighteen on the sick list, a majority being cases of slight injuries; but there were several cases of bilious fever, which did not, however, present any important features. A quarter gunner, one of the most athletic and valuable men in the ship, lost his life from a fall on shore, causing a fracture of one of the lumber vertebræ, and one case of phthisis pulmonalis terminated fatally.

At this season, (the summer,) dysentery and fevers prevail among the natives on shore, and acute cases of hepatitis also manifest themselves during the warm weather. We were called in consultation in a case of hepatitis in a Mr. Blanco, a gentleman who, educated at West Point, promised much usefulness in this new country; but several previous attacks had much enfeebled him, and suppuration taking place in the liver, he died within a short time after our first visit. The total number of days passed at Valparaiso at our different visits was one hundred and sixty, with a uniformly small sick list, notwithstanding the crew were allowed to go on shore frequently during each visit,—an immunity from disease which must be due to their incomparable climate.

The native Chilanoes are a robust and vigorous race, frequently attaining a great age. Accustomed from youth to the open air, with much active exercise, particularly on horseback, they are capable of enduring great fatigue; and nowhere are men met with, who are possessed of more iron constitutions than the inhabitants of these mountains. An inflammatory fever prevails during the autumn, in the interior, attended with much cerebral congestion, which sometimes assumes the form of a fatal epidemic. By the natives it is thought to be contagious, who give it the name of *chavolungo*, for which they administer an infusion of an indigenous plant, the *conchelagua*, a powerful diaphoretic. The condition of the medical profession, in both Chili and Peru, is very low, there being no schools of medicine. The native practitioners are from the lower orders of life, ignorant and uneducated, and commanding but little respect. In the large cities, a few foreign medical men are to be found, but their practice is limited to foreigners and a few of the most affluent of the natives, the prejudices of the lower classes being much against them.

On the 9th of February, we sailed for the United States; and we encountered head winds until we reached the fiftieth degree of south latitude, the thermometer falling as we advanced south, with much rain. On the 6th of March we were off Cape Horn, in 57° south, with the thermometer at 44°, and the barometer at 29.80 in., and thirty-six being upon the sick report. The character of the diseases on board had entirely changed since our departure from Valparaiso. Cases of pleuritis, cynanche tonsilaris, and rheumatism, augmented the sick report; and very many of the crew were very unwell, but unwilling to go upon the sick list, as long as they were able to keep about on our

passage home. After doubling Cape Horn, fresh and favorable winds continued until our arrival at Rio de Janeiro, on the twenty-third of March. The average on the report of sick for the passage, was thirty-three, three-fourths of whom suffered from inflammatory affections, produced by the cold weather off the cape; and a proportion daily of as many more were prescribed for, who still continued to perform their duty.

We remained sixteen days in Rio. Although this was the rainy season, with frequent showers during the day, yet the quantity of rain which fell was very small. The mean of the thermometer was 78o, that of the barometer 29.78 in., with twenty-one on the sick report.

After leaving Rio, a number of cases of diarrhœa were admitted for treatment, being no doubt the result of the heat and rain to which the men had been exposed in watering ship and bringing off the supplies. On the 27th of April we crossed the equator with the thermometer at 82o, with southeast trades, and twenty-seven on the sick report. We reached Boston on the twenty-third of May, after a passage of forty-four days, having had a daily average of twenty-eight sick. Upon our arrival in the United States, the health of the crew was such as to enable all but six to take their discharge. Of these, two had phthisis, one, a fracture of the leg, and the remaining three, chronic rheumatism; all of whom were transferred to the naval hospital.

Having thus concluded the statistical details of this voyage, which, it is to be feared, have proved somewhat tedious, the deductions that follow cannot, however, but be regarded as of the highest interest and importance.

The Potomac had been in commission for more than three years, during which period the total number of deaths had been twenty-five, viz:

Dysentery, - - - -	16
Phthisis, - - - - -	3
Hepatitis, - - -	1
Concealed Hernia, -	1
Hydrocephalus, - - - -	1
Fractured vertebræ, - - -	1
Shot at Quallah Battoo, - - -	2
Total,	25

Seven of the ship's company, including two of the junior officers, had been returned to the United States as invalids.

The average number of souls on board for three years was four hundred and ninety, including thirty commissioned and warrant officers. The annual ratio of deaths was therefore 2.08 per cent., which is much less than in the same number of adults on shore. It should be remembered, however, that at the time of sailing we were all in excellent health. The daily average of the number on the sick report for three years, was twenty-eight, which is surely a very small number out of a crew of five hundred, who had gone through the East Indies, and crossed the equator six times. Moreover, this was the first cruise of this ship, when, in consequence of the large quantities of salt used in their construction for the preservation of the timber, crews often suffer

much from the humidity occasioned by the salt, which does not exist in her subsequent service. The United States Frigate Brandywine was very sickly on her first two cruises, which was attributed to her being freely salted,—an inference strengthened by the fact that since then her crews have enjoyed good health.

This frigate, as an experiment in our marine, had her galley on the berth-deck, where it was thought that the heat from the fires would assist in the ventilation of the ship, at the same time that she would be kept dry between decks. There were unquestionably constant currents of air down the hatches and windsails toward the fire, at the same time that the highly rarefied air from below ascended; but this was more than counteracted by the suffocating heat of the large fires on the confined and crowded berth-deck, while the water constantly and necessarily in use in cooking, kept the lower deck wet. Besides, when the galley is placed there, cleanliness cannot be so well preserved, as when it is on the upper deck.

During the voyage of circumnavigation, the Potomac sailed over sixty-one thousand miles, having been at sea five hundred and fourteen days. She crossed the equator six times, varying from 40° north, to 57° south latitude; and in all this service, she had not a spar carried away, nor did she lose a man by any accident on board,—the strongest testimony of the excellent state of discipline, and the prudence and precaution of her commander.

In the cheerful and contented condition of the crew, with constant employment, can be traced the health of the whole ship's company; and to this end, theatrical entertainments, a weekly newspaper when at sea, and a relaxation from the severe military discipline during the long passage across the Indian and Pacific Oceans, as well as the judicious medical police enforced on board while in the most insalubrious ports on the globe,—all materially contributed. About one-third of the crew had the spirituous portion of the ration stopped for the cruise; but as that number embraced the boys and landsmen, who had never been at sea, they were more frequently on the sick list than the old seamen who drank their grog. The recent reduction in the quantity of grog, as well as the change in the ration, is probably the most important step yet taken toward the reformation and improvement of the character of the seamen and of the whole navy.

When we compare the health of the crew of the Potomac with that of early circumnavigators, the increased health of ships' companies at sea will be found truly surprising. Lord Anson sailed from England with eight vessels and one thousand nine hundred and eighty souls; and out of these, only a single ship's company, the Centurion, performed her voyage of circumnavigation. The early Spanish and Dutch navigators were equally unfortunate, and whole crews perished from the scurvy,—a disease which has been almost exterminated in modern days.

The great improvements in marine police, first adopted by Captain Cook during his voyages of discovery, among which was the introduction of the hammock for all on board, have benefited navigators as much as his geographical discoveries; but his vessels were small, which are always more healthy than large ones; his crews, at the same time, were in a constant state of excitement, anxiously looking forward toward the discoveries which they were constantly making; and they were also satisfied that they would receive a handsome reward and a

warm reception, upon their return home. These precautions, in conjunction with cheerfulness and cleanliness, constitute the only good prophylactics on board ship.

One word more in regard to scorbutus. This horrible disease may be said to have been the universal scourge of the sea until the year 1795, when the British admiralty issued an order for furnishing the navy with a regular supply of lemon-juice, from which time the extinction of this horrid disease in that arm of the service may be dated. The destructive ravages of this disorder are awfully portrayed in the narratives of the early English navigators, particularly in those of Sir Francis Drake, Davis, and Cavendish. Lord Anson, in the course of his voyage around the world, lost more than four-fifths of his men; and it is mentioned by Sir Richard Hawkins, that within his own naval experience, he had known more than ten thousand men perishing by the scurvy. Prior to the year 1796, more sailors, it is believed, fell victims to this terrific scourge, than to the united consequences of naval warfare and the various accidents incidental to a maritime life. These results, compared with the medical statistics of the Potomac's circumnavigation of the globe, we deem alone of sufficient importance in their deductions, to reward us for our present labor.

ART. VII.—*Case of complete Imperforation of the Vagina, relieved by a Surgical Operation.* By JAMES KENNEDY, M. D., of New York.

ON the sixth of January last, Mr. — called upon me, requesting a professional visit to his wife, to whom he had been married a few days previously, but with whom he had been unable to consummate the matrimonial rites. On visiting the lady, I learned from her the following particulars: She was thirty-one years of age,—was born in Bath, in the State of Maine, of healthy parents, and until the age of twelve years, enjoyed good health. At this period she began to suffer from headache, pain in the back, loins, and lower part of the abdomen; in a word, from the usual symptoms which attend the commencement of menstruation. These symptoms returned every four or five weeks, continuing perhaps a week, and then gradually subsiding, without being attended by any discharge from the vagina. This state of things held on for two years, various remedial means, such as general and local blood-letting, purgatives, the hip-bath, etc., having been employed; but, strange to say, the *vagina itself* was not examined, nor was it ever subsequently, up to the time that she came under my care.

At the age of fourteen, these symptoms were somewhat relieved by vicarious discharges of blood from the mouth, nose, and anus; and in this condition, at the age of fifteen, she was married. Her husband—a sailor—was drowned at sea about two months after marriage; but during the short period of their cohabitation, he had never been able to effect an entrance into the vagina. From the time of his death, up to the period of her marriage to her present husband, this state of things continued, but with aggravated symptoms. Frequently, so severe were

her sufferings, as to endanger life; the pain in the head and back being beyond all control, and at the same time the abdomen and legs were very much swollen. The menstrual efforts, however, still recurred about every four weeks, being usually, though not always, followed by some vicarious discharge.

On questioning her as to her sexual feelings, she replied that they were strong, and that for her own sake and that of her husband, she was not only willing, but anxious, to submit to any surgical operation that might promise to qualify her for the performance of the duties of wedlock. On examination, I found the external parts well formed and prominent, the mons veneris well covered with hair, and the labia and nymphæ fully developed; but there was not the slightest trace of an os externum. On a plane with the meatus urinarius, there was extended a firm, smooth, elastic, fleshy substance, yielding readily to the pressure of the finger, and conveying the idea of a vacant space behind; but the vagina was entirely impervious, being completely occluded. The breasts were of the usual size, full and rounded; the whole form was well developed; and with the exception of the above-mentioned peculiarity, there was nothing to indicate any departure of nature from her universal laws.

On the following day, having visited her with my friend, Dr. McComb, it was decided to make an incision from the meatus downward, and to be guided, in our further proceedings, by circumstances as they might occur. The patient was placed on the edge of a bed in the position as for lithotomy; and the labia being now separated by the thumb and fore finger of the left hand, an incision was made extending about two and a half inches in the direction of the vagina. Considerable hæmorrhage followed; and as the novelty of the case seemed to demand time for consultation, we agreed to defer all further action till the next day, and to obtain the advice of some other of our professional brethren.

On the tenth of Jan., in company with Drs. D. L. Rogers and Edward Spring, I again visited the patient; and, on consultation, it was deemed advisable to deepen the incision, so far as to enable us to decide, if practicable, upon the existence or non-existence of a uterus; and to make, at the same time, a passage, to be subsequently kept open, that might answer some of the ordinary ends of the natural vagina. The patient being placed in the position as before, Dr. Rogers introduced a speculum within the passage already made, and proceeded carefully, partly with the handle and partly with the blade of a common scalpel, to extend the incision in the direction of the vagina. The parts yielded readily; and on withdrawing the speculum, the finger could be introduced about four inches from the external orifice; but its farther progress was arrested by a semi-membranous substance, apparently of firmer texture than that which had already been divided. As it was now deemed inexpedient to extend the incision any deeper, a tent was introduced, and the woman was left for the day.

It should, however, be remarked, that there was a diversity of opinion among us as to the existence of a uterus, as well as among those who subsequently examined her, several inclining to the belief that, by pressing firmly with the point of the finger against the inner portion of the artificial vagina, the os tincæ could be felt. Considerable abdominal irritation followed the operation, but this yielded readily to the usual remedies. On the third day, the tent was removed; the passage was found some-

what contracted at its upper portion, about three inches from the os externum; and here, for the space of about half an inch, the vagina had contracted itself upon the tent, so as scarcely to permit the finger to pass through it. Another consultation was now held as to the propriety of dividing this stricture; and in view of the evidently strong disposition of the part to contract, and being unwilling to subject the patient to the pain of an operation which would probably prove ineffectual, it was determined to trust to continued dilatation in the subsequent treatment of the case.

For the ensuing fortnight, various contrivances were resorted to for the purpose of keeping the passage open, such as tents of cotton, sponge, and gum elastic tubes; but these were all not only difficult of introduction, but very painful in their removal. They proved of service, however, in preventing any great contraction of the walls of the vagina. At this period, Dr. Valentine Mott saw the patient with me, and he divided the stricture and extended the incision about one inch farther in the direction of the vagina; and now there was a free passage of about five inches, which it was necessary to endeavor to maintain. Distrusting the efficiency of the former tents, I introduced a common female syringe of the largest size, lubricated with oil, and retained it by a T bandage, so as to keep up a firm and unyielding, yet equable, pressure throughout the whole of the vagina. This was more easily introduced and withdrawn than any of the contrivances I had previously used. It created but little irritation at first, and this gradually subsided; and at the end of about three weeks, the disposition of the parts to contract ceased, the sides of the vagina lost their granulated feel, became soft and lubricated by a mucous fluid; in a word, the passage assumed the character of a natural vagina. I now withdrew the syringe, believing that the objects of the operation had been accomplished; and in the realization of this hope, both husband and wife have ever since rejoiced. Indeed, after a lapse of four months, there is not the least evidence of a supervention of contraction in the vagina.

The vicarious discharges have all ceased; and at each menstrual period since, she has had a sanguinious discharge from the vagina, continuing for three or four days. Her general health is now good, all her former distressing symptoms having disappeared—an exemption from suffering to which she has been a stranger ever since she was twelve years of age; and as regards the requirements of matrimony, save that of impregnation, she is now scarcely less perfect than her sex generally.

Besides the medical gentlemen already named, I would add in conclusion my indebtedness to Professor Gilman and Drs. A. E. Hosack and F. Cooper, for their kind council and assistance during the various stages of this highly interesting case.

Remarks.—Among the various kinds of imperforate vagina described by surgical writers, this is one of the most complicated in its nature; and as regards the requisite means of relief, it is attended with the most danger in consequence of the liability of wounding the bladder or rectum. This case, however, is instructive in many points of view.

In girls thus malformed, as is well known, when the period of menstruation appears, all the symptoms of pregnancy, in proportion as the blood accumulates internally, generally occur; but, in this instance, as nature established a vicarious monthly discharge of blood from the

nose, mouth, and rectum, the necessity of an operation was obviated. It was not until the matrimonial state asserted its undeniable claim, that the knife of the surgeon became indispensable. But not only has the operation removed, on the part of the husband, the legal right to a divorce, but by allowing the menstrual fluid to take its natural course of evacuation, her long-lost health has been completely restored, aided doubtless by the enlivening mental feelings that must necessarily accompany this most extraordinary change in her physical nature. The vagina, to the extent to which it has been incised, is lined with a mucous membrane, not distinguishable from the same tissue under ordinary circumstances, and it admits the introduction of a speculum of the size ordinarily in use; and in conformity to this apparently natural state of things, she expresses herself not only free from all pain during the act of coition, but supposes that her pleasurable sensations are not less than is usual with her sex.

A not unfrequent misfortune in similar operations is, the subsequent contraction of the vagina to such a degree as to render the operation of no real advantage, as regards sexual intercourse; but, in the present instance, this unpleasant result has not supervened, rendering the opinion probable that nature originally formed a vagina, in which a deposition of an extraneous substance may have taken place simultaneously. This opinion is warranted on the supposition, that if there had been a mere adhesion of the sides of the vagina, the close proximity of the bladder and rectum would not have allowed an incision fully an inch in length between these two organs. As the speculum, however, reveals no os tincæ, it is a disputed question whether a uterus exists; but experience has shown that when the vagina is altogether occluded, the uterus is very apt to be found wanting. Hence arise the questions in reference to this case: Is impregnation probable, or is it possible? Whence come the bloody incoagulable monthly discharges?

ART. VIII.—*On Dietaries.* By CHARLES A. LEE, M. D.

WHILE much attention has been paid to the subject of DIETARIES, in Europe, especially in Great Britain, it is a somewhat singular circumstance that they should have been almost entirely overlooked in this country. While much has been done to improve the condition of our public institutions, prisons, hospitals, alms-houses, and lunatic asylums, in other respects, yet the subject of food—the quantity and quality best adapted to the preservation of health and life, under different circumstances—seems to have been regarded with but little interest, and as a matter of minor importance. For example, a society has been in existence in Massachusetts for about twenty years, called the "*Prison Discipline Society*," the object of which is, to improve the condition of prisons and their inmates, by pointing out abuses in the construction of the buildings, their internal arrangement, and general management; and although a gentleman of great intelligence and activity, Mr. Dwight, has devoted his whole attention to the matter for

many years, by personal study, observation, and correspondence, both domestic and foreign, yet we do not find, on looking over the voluminous annual reports, any allusion to the subject of diet, except in one of an early date; notwithstanding many other subjects of minor consequence are discussed at great length, if not with an unnecessary degree of minuteness. It is rare, also, to find, in the annual reports of our hospitals and lunatic asylums, any allusion to the mode of living in these establishments, as though the duty of the attending physician were properly discharged, if there is a respectable account of drugs exhibited, patients physicked and phlebotomised, and operations performed. It may, however, be worth considering whether a greater ratio of cures would not be performed, both in public institutions, as well as private practice, by attaching more importance to the *Materia Alimentaria*, and less to the *Materia Medica.*

M. Pereira has truly remarked, that "the reports of the Inspectors of Prisons have furnished abundant evidence of the errors committed by magistrates in the dieting of criminals. Debility, diarrhœa, scurvy, and other evils, known to be consequences of defective nutriment, have prevailed in many of the prisons of this country to a serious and alarming extent." It is possible, and in some cases it no doubt has happened, that diseases have been attributed to this cause, which were owing to want of due ventilation, or want of cleanliness, or to some epidemic diathesis; but in all such cases, the evils have been aggravated by defective nutriment. This was particularly noticed during the prevalence of cholera in the United States, in 1832; for, while the the disease was attended with extraordinary fatality in those poor-houses and establishments where the diet was deficient in quantity or quality, or both; on the other hand, the mortality was very slight in those institutions where the inmates were supplied with an abundance of substantial and nourishing food.

The Inspectors of British Prisons, in their report for 1838, notice an instance, which illustrates the great importance of due attention to this subject:

"Scurvy," they remark, "prevailed at one time in the Lewes House of Correction; but, by an increase of diet it, disappeared. The diet was again diminished, and the scurvy again appeared. The diet was then permanently increased, the scurvy again disappeared, and has not since occurred." As the quantity of food necessary for the support of human health and life, varies under different circumstances, no general rule can be laid down of uniform application. This will be modified by age, sex, amount of exercise, constitution, state of health, condition of life, etc., etc.; all of which are to be duly considered by those who have the control of this department. Capt. Parry, for example, found that ten ounces of biscuit and nine ounces of beef, (pemmican) with one ounce of cocoa powder, were a sufficient daily allowance for the support of his crew on ship-board; but that it was entirely inadequate to their wants while engaged in severe labor ten or twelve hours a day, in the open air, and exposed to the wet and cold. The dietaries of Great Britain have therefore been constructed on this principle, the quantity of food being proportioned to the amount of hard labor. There are some remarks on this subject in the "Report of the Inspectors of Prisons," for 1842, which are well worthy of attention, as they are the result of actual observation.

"In the construction of a dietary for a House of Correction, it is not unfrequently assumed that something less than what is the customary food of the laboring population of the vicinity should be sufficient for those in the degraded condition of criminals. Accordingly, in those agricultural districts where meat forms but a very small proportion of the ordinary food, less has been accorded, and in some instances none, without consideration being given to the wide distinction between the condition of the freeman and the prisoner:—the one enjoying purity of air, active bodily and healthful mental exercise, social intercourse, choice and diversity of diet. It is under such circumstances that the smallest modicum of animal food proves sufficient for the preservation even of the most robust health. But reverse the situation: place the individual, as an offender against the law, in a small, cold, ill-ventilated cell; a prey to his own reflections, or, what is worse, with his mind almost a vacuum, cut off from all real social intercourse, subjected to the irksome, uninteresting labor of treading a wheel or picking oakum; it is in this condition, I contend, that the stimulus of animal food becomes indispensable for his support against the inroads of low and debilitating diseases. I scarcely recollect an instance of scurvy being prevalent in a prison but where it might be distinctly traced to a want of variety in the diet, and its deficiency in nutritive qualities."

Mr. Pereira also observes:

"That deprivation of liberty, with all its accompanying restrictions, exercises a depressing influence on the mind, and through this on the body, cannot be for a moment doubted. In this indirect way it becomes a means of affecting the organic functions; and thus it happens that an amount of nutriment, which, under the most cheering circumstances, is barely sufficient to sustain health, may prove, when conjoined with depressing mental influences, totally insufficient for the maintenance of health, and may be followed by scurvy and other diseases known to be common consequences of defective sustenance."

In the Dietaries for Prisons, recently adopted in England, the length of imprisonment has also been taken into consideration; those whose term of confinement is the longest, being furnished with a more substantial and nutritious diet than those sentenced for shorter periods. This is founded on the well-known fact, that as imprisonment exerts an injurious influence over the nutrition of the body, the effect will be more strongly marked in proportion as the term is protracted.

There is another circumstance too little regarded in the diet of our public institutions; we mean a *variety of food.* Though experiment and observation have established the fact, that considerable variety of food is absolutely necessary to the preservation of life and health, yet we often see this truth entirely disregarded. The importance of such variety is more strikingly apparent, since Liebig has shown that the animal system has no power of forming its organic constituents out of simple or elementary bodies. Textures, therefore, which are chemically different, require different aliments for their nourishment. It was maintained by Prout, (Bridgewater Treatise), and it has been the general opinion of physiologists, that the animal system has the power of forming the organic constituents of the tissues out of any substances which may happen to contain the same elements, but it is now very certain that it can only do so out of those substances whose composition and properties are analogous to, or identical with, those of the principles of which the tissues are composed.* It follows from this principle, that tissues which

*Liebig, however, makes an exception to this rule in favor of cellular tissue and membranes, and of the brain and nerves.

contain nitrogen, require nitrogenized foods, and we accordingly find that proteinaceous substances (fibrine, albumen, caseine, and glutin) serve for the formation of muscle and of the albuminous tissues; and in the case of infants nourished by milk alone, they must also become food for the gelatinous tissues (cartilage, cellular tissue, membrane, true skin, &c.) Want of space, as well as time, prevents our entering upon the extensive and somewhat obscure subject of the purposes which non-nitrogenized foods serve in the animal economy; but it is enough for us to know that they are essential to health, and that they should therefore form a part of our daily nutriment.

I. DIETARIES FOR CHILDREN.

In forming dietaries for children, we are to consider that in them nutrition is more active than in adults, for as the latter have only, as the saying is, *to hold their own*, the former have, in addition to this, *to grow*. For this reason they require a much larger amount of food, in proportion to their years and size, than adults; and if the hypothesis of Liebig be well founded, that non-nitrogenized food serves to sustain animal heat by combustion in the lungs, as the functions of circulation and respiration are more active in infancy and childhood than at any other period of life, this also will require an allowance of non-nitrogenous food, much greater in proportion to the weight of the body, than at any subsequent period. In addition to this, moreover, Liebig maintains that such food, by yielding carbon and hydrogen, to be burnt in the lungs, protects the organized tissue from the transformations consequent on the injurious action of oxygen. Hence, perhaps, the instinctive fondness of children for sugar and butter, which, notwithstanding they cannot yield blood, fibrine, or albumen, abound in carbon and hydrogen, so essential, on this hypothesis, to support the respiratory process, at an age when these elements cannot be furnished in sufficient quantity by the decomposition or metamorphosis of existing organisms.

If we view the subject aright, we shall consider the natural appetite as a true index of the wants of the system, and therefore to be regarded as a genuine rule in the dieting of children. If animal food be craved, we believe it would be wrong in general to prohibit it, and we would apply the same remark to vegetable diet. For the most part, after the first set of teeth have appeared, if children are allowed to have their choice, they will in nine cases out of ten select animal in preference to vegetable food. As animal food then suits their wants better than vegetable, *animal it should be.* We may stuff them as much as we please with sago and arrow-root, tapioca and potato-starch, sugar and butter; but as these articles do not contain the necessary ingredients for the growth of bone, cartilage, muscle, ligament, membrane, and cellular tissue, (because they contain no nitrogen, but are only elements of respiration,) we shall find that, when confined to these, they either fall off or cease to grow. Liebig maintains that if these substances are taken into the system in a quantity larger than is required for the purposes of respiration, the surplus may be converted into fat; but Dumas denies this, asserting that the fat exists ready formed in the food, and that in digestion it is taken into the blood and deposited in the cellular tissue. *Milk* is the most important of all articles of food for children, as the *caseine*, which forms a component part of it, is a proteinaceous substance, adapted for the growth of all the organized tissues, and abounding,

moreover, with phosphate of lime, so essential to the formation of bone. The cereal grains afford valuable nitrogenized foods for children, as wheat, barley, oats, rye, &c. As to quantity, we believe that children are more often under-fed than over-fed. The injurious consequences resulting from the latter, are not so manifest; while those of the former come under observation daily in the shape of diarrhœa, marasmus, tumid bowels, worms, and a predisposition to a fatal attack of every epidemic disease that may be prevalent. The opthalmia, which has heretofore been the scourge of our orphan asylums and Long Island Farms school, owed its origin to defective nutriment, and its propagation and obstinacy to want of cleanliness and ventilation. When these abuses were reformed, the disease disappeared spontaneously, as was anticipated. In the winter of 1840, an epidemic diarrhœa prevailed among the children on the Long Island Farms, attended with highly malignant symptoms, such as mortification of different parts of the body; ulceration and consequent destruction of the eyes; a thin, dissolved state of the blood; offensive odor from the skin, &c. &c. The diet of the children was entirely unsuited to their ages, being coarse and indigestive, with scarcely any milk whatever, and bread of a very inferior quality. In addition to this, the children were crowded into small apartments, where but little attention could be paid to ventilation or cleanliness. We have no doubt, however, that the disease, which proved very fatal, owed its origin to the uniform, indigestible, innutricious diet, although it was doubtless aggravated by the other causes mentioned. At the Half-Orphan Asylum, in the 6th avenue in this city, it was lately the custom to furnish boiled corned-beef to the children on Sundays; but, as it was found to produce a very general diarrhœa, it had to be laid aside, for this reason, during the summer months. We believe that the thin, innutritious soups, which are generally dealt out three or four days in the week, to the inmates of these establishments, are decidedly bad; and that they ought to give place to solid food, even though it be nothing more than a small allowance of bread and cheese. Diarrhœa is also very apt to follow the continued use of pea-soup and potato-stews; and in ninety-nine cases out of an hundred, where the services of a physician are put in requisition for the relief of pauper children, they might, with the greatest advantage, give place to those of the cook. It is, as we have already said, the aid of the *materia alimentaria*, and not *materia medica*, which should be invoked.

"Scrofulous and strumous diseases," says Pereira, "marasmus, rickets, distortions, and pot-bellies, so commonly met with among children of the poor, are referable, in part, at least, to food defective either in quantity or quality, or perhaps in both. I think it will be found, that more than two-thirds of pauper children are strumous. They derive this condition, in part, perhaps, from hereditary tendency; but partly, as I believe, from defective nutriment. To the same cause is also ascribable their inferior developments. If the children in poor-houses be examined, they will be found, for the most part, smaller and shorter for their age, more frequently distorted, and more readily fatigued, than the children of the middling and higher classes." If any person doubts the truth of this statement, he has only to examine the children at the Long Island Farms, or at either of the Orphan Asylums in this city, in order to have his doubts removed. Instead of the cheerful, ruddy hue of health, he will see a pale, leucophlegmatic, and haggard expression of countenance; and instead of the smiling joyousness and elastic spright-

liness of youth, he will observe the anxious lineaments and the torpid movements of old age. Banish your soups, which contain but two per cent. of solid matter, gentlemen and lady directors, and substitute, in their place, a plenty of good meat, bread, vegetables, and milk; and you will transform your quiet family of little old men and women, into boisterous, laughter-loving, disease-defying, boys and girls. There would be as great a transformation, as any we read of in Ovid.*

**Soup.*—The nutritive qualities of soup are exceedingly overrated. Common butcher's meat contains about one-seventh of its weight of fat and cellular tissue; when devoid of fat, it contains 74 per cent. water and 26 dry matter, the latter of which contains 13,6 parts of carbon. Of fresh lean beef, about 15 per cent. is composed of fibrine, vessels, and nerves; 1.9 per cent. of cellular tissue, convertible into gelatine by boiling; 2 per cent. of soluble albumen; some salts and coloring matter; and 77.17 per cent. of water.

Now, in boiling meat, the fibrine, which forms nearly the whole of the solid matter, (except bone,) is rendered harder, as it is entirely insoluble in water. The albumen, being partly solid and partly liquid, the latter is coagulated by boiling water; but a small portion, containing a quantity of nitrogen, is dissolved. The *hematosin*, or coloring matter, is entirely coagulated by heat, and forms brown floculi, which float upon the top of the liquid, forming the scum. The bones, aponeuroses, tendons, and cellular tissue, form gelatine by boiling, while the fatty matters melt and float on the top of the broth. The cerebral or nervous matter, is softened by heat, and carried off in vapor, forming the odor of boiled meat and of soup, under the name of *osmazome*. Besides these, there are several products, the result of unknown reactions, during ebulition, such as *creatine; ammonia; sulphuretted hydrogen;* two volatile acids, etc.

Broth then contains, *gelatine, albuminous matter, creatine, extractive matters, lactic acid, salts, fatty matter, saccharine matter, and water; and boiled meat* contains *fibrine, albumen, gelatinous cellular tissue, fat, nervous matter,* and *water.*

The vegetables employed communicate coloring and mucilaginous matters, sugar, nitrogenized matter, volatile oils, and salts. Onions and leeks furnish an acrid volatile oil; the sweet herbs an aromatic oil; and cruciferous plants, a sulphuretted and nitrogenized principle. (Pereira.)

The following table from Chevreul shows the quantity of alimentary matter contained in soups and broths:—

Substances used in the preparation of broth.		*Products.*	
Beef,	1.433	Broth, 8.4-10 wine pints.	
Bone,	0.430	Boiled meat,	0.858
Common Salt,	0.040	Bone,	0.392
Water,	5000.000	Vegetables,	0.340
Turnips, Carrots, Onions, (burnt,)	0.331		
The specific gravity of the broth was			1.0136
2.1-10 wine pints contained,			
	Water,		985.600
	Organic matters,		16.919
Salts, Soluble,	Potash, Soda, Chlorine, Phosphoric acid, Sulphuric acid,		10.721
Salts, Insoluble,	Phosphate of Magnesia, " Lime, Oxyde of Copper,		8.539
	Total		1013.6

Majendie states that 2.1-10 wine pints of broth, contain from 24 to 25 grammes (= 370 to 385 Troy grains) of dry matter, of which from 8 to 10 grammes (= 123 to 154 Troy grains) are saline substances. A pint of soup, according to this, will not contain over one drachm of solid matter, equal to about a single mouthful of meat.

It is strenuously contended by the Grahamites, that a vegetable diet is far preferable to one of animal food for children; but, thus far, we have not been convinced by their arguments. There is no doubt that life and health may be sustained by the cereal grains, potatoes, and fruit, as we know that they contain all the elements necessary for perfect nutrition and the growth of the several tissues; but experience has proved that a mixed diet, whether in children or adults, is preferable to one exclusively composed of either. The vegetable-eaters, to sustain their side of the question, have published an account of an experiment made in 1830, in the Orphan Asylum of Albany, from which, the following facts are gathered:

"The institution was established about the close of the year 1829, or the beginning of the year 1830. Shortly after its establishment it contained seventy children, and subsequently many more. For the first three years the diet of the inmates consisted of fine bread, rice, Indian puddings, potatoes and other vegetables, and fruit with milk; to which was added flesh or flesh-soup once a day. Considerable attention was also paid to bathing and cleanliness, and to clothing, air, and exercise. Bathing, however, was performed in a perfect manner only once in three weeks. Many were received in poor health, and not a few continued sickly.

"In the fall of 1833 the diet and regimen of the inmates were materially changed. *Daily ablution of the whole body*, in the use of the cold shower or sponge bath, or, in cases of special disease, the tepid bath, was one of the first steps taken; then the fine bread was laid aside for that made of unbolted wheat meal, and soon after flesh and flesh-soups were wholly banished; and thus they continued to advance, till in about three months more they had come fully upon the vegetable system, and had adopted reformed habits in regard to *sleeping, air, clothing, exercise*, &c. They continued on this course till August, 1836, when the results were as follows:—During the first three years in which the old system was followed, from four to six children were continually on the sick-list, and sometimes more. A physician was needed once, twice, or three times a week, uniformly, and deaths were frequent. During this whole period there were between thirty and forty deaths. After the new system was fairly adopted, the nursery was soon entirely vacated, and the services of the nurse and physician no longer needed, and for more than two years no case of sickness or death took place. In the succeeding twelve months there were three deaths; but they were new inmates, and were diseased when admitted, and two of them were idiots. The Report of the Managers says, 'Under this system of dietetics the health of the children has not only been preserved, but those who came to the asylum weakly, have become healthy and strong, and greatly increased in activity, cheerfulness, and happiness.' The Superintendents also state, that 'since the new regimen has been fully adopted, there has been a remarkable increase of health, strength, activity, vivacity, cheerfulness, and contentment among the children. The change of temper is very great. They have become less turbulent, irritable, peevish, and discontented, and far more manageable, gentle, peaceable, and kind to each other.' One of them further adds, 'there has been a great increase in their mental activity and power; the quickness and acumen of their perception, the vigor of their apprehension, and the power of their retention, daily astonish me.'"

In relation to the above experiment, the results appear to us to be owing more to the changes made in the general regimen, air, cleanliness, bathing, exercise, &c., than for the substitution of vegetable for animal food. In order to be satisfactory, the experiment should have been conducted with reference to the diet alone. As it is we do not see how it can be quoted, as it has been, as furnishing satisfactory evidence of

the superiority of vegetable over animal diet. We have often known the same improvement take place among children in private families by the daily use of the shower bath, without making any alteration in their manner of living. The experiment, however, is a very valuable one, as it shows the great advantages which flow from a well-regulated system of air, exercise, and bathing.

In proof of the correctness of our opinion that the favorable results in this institution were not owing to a change of diet, we may refer to a similar experiment in a school in Germany, as contained in the "American Annals of Education" for August, 1836. Here meat was allowed, though food is stated to have consisted chiefly of bread and other vegetables, fruits and milk; but *cold bathing* was practised daily. The results, as stated by the teacher, were as follows:

"I am at present the foster-father of nearly seventy young people, who were born in all the varieties of climate from Lisbon to Moscow, and whose early education was necessarily very different. These young men are all healthy; not a single eruption is visible on their faces; and three years often pass during which not a single one of them is confined to his bed: and in the twenty years that I have been engaged in this institution, not one pupil has died. Yet I am no physician. During the first ten years of my residence here, no physician entered my house; and not till the number of my pupils was very much increased, and I grew anxious not to overlook anything in regard to them, did I begin to seek at all for medical advice. It is the mode of treating the young men here which is the cause of their superior health; and this is the reason why death has not yet entered our doors. Should we ever deviate from our present principle—should we approach nearer the mode of living common in wealthy families—we should soon be obliged to establish in our institution, as they do in others, medicine-chests, nurseries, &c."

In individual cases, after children have acquired their first teeth, we have seen no advantages follow from confining them exclusively to vegetable diet, except in disease, and rarely then; but, on the contrary, we have known great improvement, especially among the children of the poor, from a more liberal allowance of animal food, and we doubt not that the dietaries of children should be formed on this principle.

Since writing the above, we have conversed with one of the founders and principal managers of the Albany "Orphan Asylum," and we find that the change in the health of the children could not with propriety be attributed to the substitution of vegetable for animal food. During the first few years after the establishment of the institution, it was located in a poorly-ventilated building, in one of the most crowded streets in the city of Albany, where fresh air and proper exercise were out of the question, and cleanliness was next to impossible. At the commencement of the experiment above mentioned, the children were removed into a large, commodious, and exceedingly well-ventilated building, situated out of the city, in one of the most delightful spots in the neighborhood of Albany. In addition to cold bathing, every morning the children were required to take an abundance of exercise—were confined but three or four hours daily in school, instead of six or seven, and were, moreover, allowed meat occasionally, though the principal part of the diet consisted of milk, potatoes, Indian mush, and a plenty of good bread.

But we will extend our view of the Dietaries of children to several other institutions:

NEW YORK ORPHAN ASYLUM.

Breakfast.	Bread and molasses, with a cup of milk, or milk and water.	
Dinner.	*Monday*	Indian mush, with milk or molasses. Other vegetables.
	Tuesday	Soup and vegetables, bread, &c.
	Wednesday	Meat, hashed with potatoes and other vegetables.
	Thursday	Indian mush, or rice and molasses, or milk.
	Friday	Mashed fish and potatoes, (generally cod, fresh or salt.)
	Saturday	Soup, &c., as on Tuesday.
	Sunday	Cold roast beef and vegetables.
Supper.	Bread and milk, or bread and molasses. On Sunday, bread and butter, or gingerbread.	

Remarks. There are 108 boys and 52 girls in the institution. Beef is the meat chiefly used. On Tuesdays and Saturdays sixty pounds of best quality of rounds of beef are purchased, making one hundred and twenty pounds weekly. On Saturdays the meat is boiled sufficiently for soup, then roasted and set aside to be eaten cold on Sunday. The bread is baked in the institution. Four and a half barrels of flour are used per week, and half a barrel of Indian meal. About 425 bushels of potatoes are consumed annually. Three cows are kept on the premises, and a small quantity of milk is purchased, amounting to about fifteen dollars annually. Milk is usually allowed night and morning, and once a week for dinner. The children are kept in school six hours a-day, and bathe in tepid water every Saturday. The deaths have averaged about two and a half annually. The children are allowed to eat what they want, within moderation. Though the children appear satisfied with their diet, yet they have not that florid and healthy appearance which is characteristic of rugged health. We believe that if meat were allowed daily, and in a much larger quantity, it would be an improvement in their system of diet; and if required to take more exercise, it would doubtless contribute to their health. The ophthalmia, which was formerly very prevalent in the institution, (and probably caused by want of ventilation and cleanliness, with perhaps too low a diet,) is now almost unknown.

Now a simple calculation will show that the above quantity of meat is but a mere fractional part of what these children ought to have. Supposing that there is no loss from bone or cooking, it would furnish but one pound to each child weekly, or about two ounces daily, avoirdupois weight. But it is found, by actual experiment at our city prison, that where beef consists of flanks, leg of mutton pieces, clods, and briskets, one-half consists of bone, which is to be deducted from the whole weight. In addition to this, there is a great loss in preparing and serving cooked meat in public institutions; such as the fat, the outside, and coarser parts of the beef; the evaporation and running off of the juices during carving, etc. In *mutton*, taking meat of all the seasons, it was found in some of the large establishments in London, that the average loss from these sources alone, was 17.5 per cent.; while in *beef*, wholly free from bone, as in the former case, the centessimal proportion of loss to the whole quantity cooked, was 17 6 lbs. Taking twenty-one work houses, however, in different parts of England, where the total consumption of beef and mutton, including loss, was, in a

certain period, 297,990 pounds, the total loss, or waste in cooking and serving was (without bone) 90,434 pounds, or 30.06 per cent. If this calculation be anything like an approximation to the truth, it follows that the children of the New York Orphan Asylum are furnished with about three-fourths of an ounce of meat daily.

We believe that, were the experiment made, great benefit would follow from banishing soup entirely from the institution; or, if allowed, the meat, of which it is made, should be eaten at the same time with it. The meat should be roasted half the time at least; and potatoes, baked or boiled, should form a part of both breakfast and dinner, unless there is milk sufficient to allow each one a pint. Rice is highly nutritious, and being very cheap, should be served up frequently, with molasses, as a dessert. A dinner of mush and molasses alone is apt to be too relaxing to the bowels. Beef should never be boiled and then roasted, to be eaten cold the next day. In this manner the natural juices of the meat are all extracted, and the fibre becomes tough, dry, and indigestible, and therefore particularly hurtful to children. This is a custom which we should consider "more honored in the breach than in the observance."

NEW YORK PROTESTANT HALF-ORPHAN ASYLUM.

Dinner.	*Monday*	Bean-soup with bread.
	Tuesday	Mutton soup, with vegetables, (potatoes, turnips, carrots,) bread.
	Wednesday	Mutton, hashed, with potatoes and rice; clam-soup during the summer months, with potatoes and rice; or balls of flour boiled, with rice.
	Thursday	Beef-soup, with vegetables and bread.
	Friday	Beef, hashed, with potatoes and rice, bread.
	Saturday	Bread and butter, or rice.
	Sunday	Cold corned beef and bread, except during the summer months, when crackers and cheese are substituted for salt meat, which was found to produce bowel complaints.
Breakfast.		Bread and milk for the smaller children; bread with molasses, or sugar, or honey for the larger ones.
Supper.		Plain bread, except on Sunday night, when gingerbread is allowed.

Remarks.—The number of inmates ranges from 154 to 180; ages from three to nine years. Twenty-two quarts of milk are furnished daily, at 5½ cents per quart. Once a week the children are bathed in cold Croton water, except during the hot months, when the larger children are taken to the cold salt-water bath in the river. They remain in school six hours per day. Fifty pounds of mutton are purchased twice a-week, and fifty pounds of beef ditto. Occasionally codfish and potatoes, and fruit in its season, are furnished.

Now compare with the above, which we select from a large number, as samples of the dietaries of children in this country, the following, for the principal metropolitan establishments of a similar kind in England, for which we are indebted to Mr. Pereira's excellent work on "Food and Diet:"

"*London Foundling Hospital.*

1.—DIET FOR CHILDREN UNDER NINE.

Breakfast. Bread, 4 oz.; Milk, half-pint, boiled with an equal quantity of water.

Dinner.

Monday	4 oz. uncooked Mutton for roasting; 6 oz. Potatoes; 2 oz. of Bread.
Tuesday	4 oz. of uncooked Beef to be boiled into soup, with 1½ oz. of Rice; 4 oz. of Bread.
Wednesday	Same as Monday.
Thursday	Same as Tuesday.
Friday	Same as Monday.
Saturday	Rice Pudding (viz, milk ¾ pint, rice 3 oz., treacle ½ oz.) and Suet Pudding (viz. flour 7¼ oz., suet 1½ oz., [illegible] of a pint) alternately.
Sunday	4 oz. of uncooked Beef for roasting (cold); 6 oz. of Potatoes; 2 oz. of Bread

Supper. Bread, 4 oz.; ¼ of a pint of Milk.

"2.—DIET FOR CHILDREN AT AND ABOVE NINE.

Breakfast. Bread, 6 oz.; Milk, ½ pint, boiled with anequal quantity of water.

Dinner.

Monday	7 oz. of uncooked Mutton, for roasting; 10 oz. of Potatoes.
Tuesday	7 oz. of uncooked Beef, to be boiled into soup; 4 oz. of Bread.
Wednesday	Same as Monday.
Thursday	Same as Tuesday.
Friday	Same as Monday.
Saturday	Rice Pudding, with Suet Pudding alternately.
Sunday	7 oz. of uncooked Beef for roasting (cold); with 10 oz. of Potatoes.

Supper. Bread, 6 oz.; Butter, ½ oz.; Treacle, alternate nights.

"3.—ROYAL MILITARY ASYLUM, CHELSEA.

(Boys of from five to fourteen Years of Age.)

Breakfast. Milk Pottage. Milk, 1-6th of a quart; Oatmeal, 1-16th of a lb.; Bread, 1-20th of a quartern loaf.

Dinner.

Sunday	Meat, 8 oz.; Potatoes, 12 oz.; Bread, 1-20th qu. loaf.
Tuesday, Thursday, Saturday	Beer ½ pint. [On Sunday the meat is roast beef; on Tuesday and Thursday, stewed beef; and on Saturday, stewed mutton.]
Monday, Friday	Pudding, Suet, 1½ oz.; Flour, 6 oz.; Potatoes, 8 oz.; Beer, half a pint.
Wednesday	Pea-soup, 1 gill; Potatoes, 12 oz.; Bread, 1-20th of a quartern loaf; Beer, half a pint.

Supper.

Daily	Bread, 1-20th of a quartern loaf.
Sunday, Tuesday, Thursday, Saturday	Cheese, 1¼ oz.; Beer, half a pint.
Monday, Wednesday, Friday	Milk, half a pint.

"N. B.—The Meat is estimated as taken from the butcher, including bone.

"A proportion of the very small children on 6 oz. of Meat.

"4.—NAVAL ASYLUM, GREENWICH.

Breakfast. 1 pint Cocoa (½ oz. cocoa, ½ oz. sugar, 1 gill milk); 5 oz. bread.

Dinner.

Sunday, Tuesday, Thursday	Roast Beef, 9½ oz. Potatoes, 8 oz. Bread 3½ oz. Beer, half pint.
Monday, Friday	Suet Pudding { 1½ oz. Suet, 6 oz. Flour—Bread and Beer as above.
Wednesday	Pea Soup (1 gill of Peas.) Potatoes, 8 oz.—Bread and Beer as above.
Saturday	Muttton, boiled, Potatoes, 8 oz. } Irish Stew—Bread and Beer.

Supper. Half-pint Milk and 5 oz. of Bread.

"5.—INFANT ORPHAN ASYLUM, DALSTON.

Breakfast. Bread and Milk daily.

Dinner.

Monday	Meat, or boiled Beef-steak Pudding.
Tuesday	Mutton, (not over boiled,) Potatoes and boiled Rice.
Wednesday	Cold Mutton and Family Pudding.
Thursday	Roasted legs of Mutton and Potatoes.
Friday	Cold Mutton and Family Pudding.
Saturday	Roasted Beef, Potatoes, and Suet Pudding.
Sunday	Cold Roasted Beef, and mashed Potatoes. Beverage—Toast-water.

Supper. Bread and Butter, with Milk and Water.

"Children under three years of age to have Beef Tea, or Mutton Broth, besides cold Meat on Sundays.

"Where the medical officers prescribe, Beer is substituted at dinner for Toast-water.

"Family Puddings to consist of dried Raisins, Apples, Rhubarb, &c., according to the season.

"Green Vegetables are occasionally introduced, as circumstances require.

"The Bread to be of the best quality, and two days old before cut.

"The joints to consist of top sides of rounds of the best Ox Beef, weighing about 28 lbs., and legs of the best Wether Mutton, weighing about 10 lbs. each.

As much as they like to eat, within moderation.

"6.—MR. AUBIN'S ESTABLISHMENT AT NORWOOD, SURREY.

Breakfast. Milk Porridge, with Bread in it.

Dinner.

Sunday, Tuesday, Thursday	Baked or Boiled Mutton or Beef, with Vegetables and Broth.
Monday, Friday	Soup with Bread in it.
Wednesday, Saturday	Baked or Boiled Rice Pudding, with Milk and Sugar.

Supper. Bread and Butter, with Milk and Water.

"Children under 8 years not restricted to quantity: those from 8 to 14 or 15 are allowed 1½ pints Porridge, 4 oz. Bread, 5 oz. Meat, 1 lb. Potatoes, ½ pint Broth, 1½ pints Soup, 16 oz. boiled Rice, 6 or 8 oz. of Bread and Butter. Those under 7 years of age to be allowed Sago, Arrow-root, Milk, or any other nourishment their tender age may require.

"Children, when ill, to be dieted by the medical attendant. Roast Veal or Pork to be allowed on Easter and Whit-Sunday, and Roast Beef and Plum Pudding on Christmas-day."

It is unnecessary to offer many comments upon the above dietaries. Their great superiority to those of a like kind in our own country, is too obvious to need remark. We would direct attention particularly to the mode of living at Dalston, as furnishing a model well worthy of imitation in similar institutions among us. Meat, potatoes, and bread, (ad libitum,) followed by rice or pudding, daily, for dinner, with bread and milk for breakfast and supper, looks something like living; and then the infrequency with which *soup* is mentioned is altogether exhilarating. "Go ye and do likewise."

III. NAVY AND ARMY DIETARIES.

1. DIETARY OF THE UNITED STATES NAVY, FOR 1843.

The United States navy ration consists of the following daily allowance of provisions for each person:

One pound of salted pork, with half a pint of peas or beans; or one pound of salted beef, with half a pound of flour and a quarter of a pound of raisins, dried apples, or other dried fruits; or one pound of salt beef with half a pound of rice, two ounces of butter, and two ounces of cheese, together with fourteen ounces of biscuit, one quarter of an ounce of tea, or one ounce of coffee, or one ounce of cocoa, two ounces of sugar, and one gill of spirits; and of a weekly allowance of half a pound of pickles or cranberries, half a pint of molasses, and half a pint of vinegar. Fresh meat may be substituted for salt beef or pork, and vegetables or sour crout for the other articles usually issued with the salted meats, allowing one and a quarter pounds of fresh meat for one pound of salted beef or pork, and regulating the quantity of vegetables or sour crout so as to equal the value of those articles for which they are substituted.

When it is necessary, in the above daily allowance, it is lawful to substitute one pound of soft bread, or one pound of flour, or half a pound of rice, for fourteen ounces of biscuit; half a pint of wine for a gill of spirits, half a pound of rice for half a pint of beans or peas; half a pint of beans or peas for half a pound of rice.

When deemed expedient, the articles of butter, cheese, raisins, dried apples, or other dried fruits, pickles and molasses, may be substituted for each other and for spirits, provided the article substituted shall not exceed in value the article for which it may be issued, according to the scale of prices which is established for the same. In cases of necessity, the above daily allowance of provisions may be diminished, at the discretion of the commanding officer, allowing payment, however, in money for the deficiency, according to the established scale of prices.

No commissioned officer or midshipman, or any person under twenty-one years of age, is allowed to draw the spirit part of the daily ration, and all others are permitted to relinquish that part of their ration, drawing for it the value of the same in money.

2. DIETARY FOR THE BRITISH NAVAL SERVICE.*

"The victualling of the Navy," says Dr. John Wilson,† "is as nearly

* "Appendix, 19.

† "*Statistical Reports of the Health of the Navy, for the Years* 1830–1836. South American, West Indian and North American, Mediterranean and Peninsular Commands. Ordered by the House of Commons to be printed, March 24, 1840.

as possible uniform throughout the service as circumstances will permit; at sea it is almost entirely so; in harbor it varies more or less, according to the supplies of fresh provisions procurable in different places."

In the "*Regulations of His Majesty's Service at Sea*," established by the King in Council, January 1st, 1833, is contained the following scale of diet used in the Navy:

"'There shall be allowed to every person serving in His Majesty's ships the following quantities of provisions, viz.:—

Bread	1 lb.	Fresh Meat and Vegetables	1 lb. and ½ lb.
Beer	1 gallon.		
Cocoa	1 oz.	Tea	¼ oz.
Sugar	1½ oz.		

"'When fresh Meat and Vegetables are not issued, there shall be allowed in lieu thereof—

Salt Beef and Flour ¾ lb. and ¾ lb. alternately with or Salt Pork ¾ lb. and Peas ½ pint.

"'And weekly, whether fresh or salt Meat be issued—

Oatmeal ½ pint. | Vinegar ½ pint.

"'The following Scheme shows the proportion of Provisions with salt Meat for each man for 14 days:

DAYS OF THE WEEK.	Bread	Beer	Sugar	Cocoa	Tea	Beef	Pork	Flour	Peas	Oatmeal	Vinegar
	lb.	*gall.*	*oz.*	*oz.*	*oz.*	*lb.*	*lb.*	*lb.*	*pint*		
Sunday	1	1	1½	1	¼	¾	—	¾	—	½	½
Monday	1	1	1½	1	¼	—	¾	—	½		
Tuesday	1	1	1½	1	¼	¾	—	¾	—		
Wednesday	1	1	1½	1	¼	—	¾	—	½		
Thursday	1	1	1½	1	¼	¾	—	¾	—		
Friday	1	1	1½	1	¼	—	¾	—	½		
Saturday	1	1	1½	1	¼	¾	—	¾	—		
Sunday	1	1	1½	1	¼	—	¾	—	½	½	½
Monday	1	1	1½	1	¼	¾	—	¾	—		
Tuesday	1	1	1½	1	¼	—	¾	—	½		
Wednesday	1	1	1½	1	¼	¾	—	¾	—		
Thursday	1	1	1½	1	¼	—	¾	—	½		
Friday	1	1	1½	1	¼	¾	—	¾	—		
Saturday	1	1	1½	1	¼	—	¾	—	½		
Proportion for 14 days	14	14	21	14	3½	5¼	5¼	5¼	3½	1	1

"'On the days on which Flour is ordered to be issued, Suet and Raisins or Currants may be substituted for a portion of Flour:

1 lb. of Raisins being considered equal to 1 lb of Flour.

¼ lb. of Currants and ¼ lb. of Suet do. do. do.

"'In case it should be found necessary to alter any of the above species of Provisions, and to issue others as their substitutes, it is to be observed that—

1¼ lb. of Soft Bread or 1 lb. of Rice or 1 lb. of Flour — is to be considered equal to 1 lb. of Biscuit.

1 pint of Wine or ½ pint of Spirits — is to be considered equal to 1 gallon of Beer.*

* Half a pint of spirits is not equal to one gallon of beer, nor to one spoonful. It contains no nutriment, as we have shown elsewhere, but is a pure stimulant.—L.

1 oz. of Coffee or ½ oz. of Tea	is to be considered equal to 1 oz. of Cocoa.
1 lb. of Rice or 1 pint of Calavances* or 1 pint of Dholl†	is to be considered equal to 1 pint of Peas.
½ lb. of Butter	is to be considered equal to 1 lb. of Cocoa.
2 lbs. of Cheese	are to be considered equal to 1 lb. of Cocoa.
¼ lb. of Onions or ¼ lb. of Leeks	is to be considered equal to 1 lb. of other Vegetables.'

"After fourteen days' use of salt food, lemon juice, with an additional allowance of sugar, is issued as an antiscorbutic.'‡

"From these statements," says Dr. Pereira, "it is obvious that the quantity of food supplied to the Navy is most ample, though not excessive. The total weekly allowance, when either fresh or salt meat is issued, is as follows:

	Fresh Meat Diet.	Salt Meat Diet.
Bread	112 oz.	112 oz.
Meat	112 oz.	84 oz.
Vegetables	56 oz.	0 oz.
Flour	0 oz.	42 oz.
Peas	0	[1½ pints say] 29½ oz.
Oatmeal [½ pint say]	5 oz.	5 oz.
Sugar	10½ oz.	10½ oz.
Cocoa	7 oz.	7 oz,
Total	302½	290¼
Beer	7 gallons	7 gallons
Vinegar	0½ pint	0½ pint
Tea	1¼ oz.	1¼ oz.

"The substitution of one kind of provision for another is an excellent arrangement, by which considerable variety of food, so necessary for the preservation of health, is obtained. A reasonable complaint, however, may be made with regard to the scale of equivalents adopted. It will be perceived that 8 oz. of fresh vegetables are considered equal to 12 oz. of flour, or to half a pint of peas: whereas in reality at least 8[illegible] oz. of fresh vegetables are required to be equal to 12 oz. of wheat flour.§

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* "*Calavances*, a kind of pulse. According to Sir H. Sloane, it is the *Phaseolus sphærospermus*.

† "*Dholl* or *Dal* is the split peas of India. That which is obtained from *Phaseolus radiatus* is reckoned the best kind.

‡ "Dr. J. Wilson's *Statistical Reports*.

§ "In making the above calculation, I have assumed that 100 parts of wheat flour contain 88 parts of dry nutritive matter, and that 100 parts of fresh vegetables (potatoes, cabbage, carrots, and turnips) contain, on the average, only 12.15 parts of dry nutritive matter. For

100 parts of potatoes	contain about	21	parts	dry matter
" " cabbage	" "	7.7	"	" "
" " turnips	" "	7.5	"	" "
" " carrots	" "	12.4	"	" "
Total		48 6		
Average		12.15		

"If we calculate according to Boussingault's nitrogen scale of nutritive equivalents, (see p. 27–28,) about 105¼ parts of fresh vegetables (potatoes, cabbage, carrots, and turnips) are equivalent to 12 parts of wheat flour.

"Dr. Wilson declares the naval rations to be both abundant in quantity and excellent in quality; and he adds that they contribute largely to the high degree of health now enjoyed in the Royal Navy.

"The water employed in the navy was formerly carried to sea in casks, and soon became putrid and offensive, owing to the vegetable admixture. The substitution of iron tanks for casks has remedied this evil; and the water can now be kept for any length of time without becoming offensive either to the palate or nose. The metal becomes oxidized, and the oxide of iron thus formed mixes with the water; but, by its weight and insolubility, it soon falls, at least for the most part, to the bottom; and should a small portion remain suspended and be drunk, it can have no injurious effect, but may possibly prove beneficial."

United States Army Ration.

According to the most recent Army Regulations, the component parts of the ration are as follows:

"Three-fourths of a pound of pork or bacon, or one and one-fourth pounds of fresh or salt beef; eighteen ounces of [soft] bread or flour, or twelve ounces of hard bread, or one and one-fourth pounds corn-meal; and at the rate of four pounds of soap, one and a half pounds of candles, two quarts of salt, four quarts of vinegar, eight quarts of peas or beans, or (in lieu thereof) ten pounds of rice, six pounds of coffee, and twelve pounds of sugar, to the hundred rations. On a campaign or on board of transports at sea and on the lakes, the ration of [hard] bread is one pound."

But, at the same time, it is necessary to bear in mind, that as soldiers unite to form messes, a barrel of pork is very soon saved; and the government price is allowed for this by the commissary, who makes other purchases, such as potatoes, onions, tobacco, etc. Hence, vegetables, if they can be obtained, are always abundantly supplied. In bread there is also a saving of at least thirty per cent., as the baker furnishes a pound of bread for a pound of flour; and even this, he finds a not unprofitable exchange, after paying for rent, fuel, salt, and labor.

It is necessary, however, to postpone our intended comparison of American with British dietaries to the next number of this Journal.

British Army Ration.

The daily allowance to the soldier in Great Britain is one pound of bread and three-quarters of a pound of meat, making together one hundred and ninety-six ounces of solid food weekly. For this he pays a fixed sum daily, viz., sixpence, whatever may be the market price; any excess being paid by the government. He furnishes himself with other provisions.

III. BRITISH DIETARIES FOR PAUPERS.

The Poor-Law Commissioners of England have laid it down as a rule in the dieting of paupers, that while they are to have an adequate supply of wholesome food, it is not to be superior in quantity or quality to that which the laboring classes in the respective neighborhoods supply for themselves. To accomplish this object, the Commissioners, in their Report for 1836, have adopted six dietaries for use in poor-houses; all of which have been tried in different parts of England, and found,

according to Dr. Pereira, perfectly satisfactory, both as to quantity and quality of food. The articles which enter into these dietaries are the following:—Bread, gruel, meat, potatoes, butter, soup, suet or rice pudding, cheese, broth, tea, sugar, and vegetables. From four to eight ounces of meat are allowed two or three days in the week, for dinner, with three-fourths of a pound of potatoes; on two days, bread and cheese; two days, soup; and one day, rice or suet pudding, or dumplings. For breakfast, generally, a pint and a half of gruel or porridge, with eight ounces of bread; and for supper, bread and cheese, or bread and butter. The following will serve as samples of these dietaries; the one marked No. 2 is that of twenty-six Unions of the county of Kent, and it has been found to answer well, and to need no alteration.

"1. DIETARY FOR ABLE-BODIED MEN AND WOMEN.

		BREAKFAST.		DINNER.				SUPPER.		
		Bread.	Gruel.	Cooked Meat.	Potatoes	Soup.	Suet or Rice Pudding.	Bread.	Cheese.	Broth.
		oz.	*pints.*	*oz.*	*lbs.*	*pints.*	*oz.*	*oz.*	*oz.*	*pints.*
Sunday Tuesday Thursday	*Men*	6	1½	5	½	—	—	6	—	1½
	Women	5	1½	5	½	—	—	5	—	1½
Monday Wednesday Saturday	*Men*	6	1½	—	—	1½	—	6	2	—
	Women	5	1½	—	—	1½	—	5	2	—
Friday	*Men*	6	1½	—	—	—	14	6	2	—
	Women	5	1½	—	—	—	12	5	2	—

"Old people of 60 years of age and upward, may be allowed 1 oz. of tea, 5 oz. of butter, and 7 oz. of sugar, per week, in lieu of gruel for breakfast, if deemed expedient to make this change.

"Children under 9 years of age to be dieted at discretion; above 9, to be allowed the same quantities as women.

"2. GENERAL DIETARY FOR THE ABLE-BODIED.

		BREAKFAST.			DINNER.				SUPPER.		
		Bread.	Cheese.	Butter.	Meat Pudding with Vegetables.*	Suet Pudding with Vegetables.*	Bread.	Cheese.	Bread.	Cheese.	Butter.
		oz.	*oz.*	*oz.*	*oz.*	*oz.*	*oz.*	*oz.*	*oz.*	*oz.*	*oz.*
Sunday	*Men*	6	1	—	16	—	—	—	6	1	—
	Women	5	—	½	10	—	—	—	5	—	½
Monday Wednesday Thursday Saturday	*Men*	6	1	—	—	—	7	1	6	1	—
	Women	5	—	½	—	—	7	1	5	—	½
Tuesday Friday	*Men*	6	1	—	—	16	—	—	6	1	—
	Women	5	—	½	—	10	—	—	5	—	½

"Old people, being all 60 years of age and upward:—The weekly addition of 1 oz. of tea, and milk or sugar; also, an additional meat-pudding dinner on Thursday in each week, in lieu of bread and cheese, to those for whose age and infirmities it may be deemed requisite.

* "The vegetables are extra, and not included in the weight specified.

"Children under 9 years of age:—Bread and milk for their breakfast and supper, or gruel when milk cannot be obtained; also, such proportions of the dinner diet as may be requisite for their respective ages.

"3. DIETARY FOR ABLE-BODIED PAUPERS.

		BREAKFAST.		DINNER.					SUPPER.	
		Bread.	Gruel.	Cooked Meat.	Potatoes or other Vegetables.	Soup.	Bread.	Cheese.	Bread.	Cheese.
		oz.	pints.	oz.	lb.	pints.	oz.	oz.	oz.	oz.
Sunday, Monday, Wednesday, Friday	*Men*	8	1½	—	—	—	7	2	6	1½
	Women	6	1½	—	—	—	6	1½	5	1½
Tuesday	*Men*	8	1½	8	½	—	—	—	6	1½
	Women	6	1½	6	½	—	—	—	5	1½
Thursday	*Men*	8	1½	—	—	1½	6	—	6	1½
	Women	6	1½	—	—	1½	5	—	5	1½
Saturday	*Men*	8	1½	Bacon. 5	½	—	—	—	6	1½
	Women	6	1½	4	½	—	—	—	5	1½

"Old people of 60 years of age and upward may be allowed 1 oz. of tea, 5 oz. of butter, and 7 oz. of sugar, per week, in lieu of gruel for breakfast, if deemed expedient to make this change.

"Children under 9 years of age to be dieted at discretion; above 9, to be allowed the same quantities as women.

"4. DIETARY FOR ABLE-BODIED PAUPERS OF BOTH SEXES.

		BREAKFAST.		DINNER.					SUPPER.	
		Bread.	Gruel.	Pickled Pork or Bacon with Vegetables.	Soup.	Bread.	Meat Pudding with Vegetables.	Rice or Suet Pudding with Vegetables.	Bread.	Cheese.
		oz.	pints.	oz.	pints.	oz.	oz.	oz.	oz.	oz.
Sunday, Tuesday, Friday	*Men*	8	1½	—	2	6	—	—	6	2
	Women	6	1½	—	1½	5	—	—	5	1½
Monday, Thursday	*Men*	8	1½	—	—	—	—	12	6	2
	Women	6	1½	—	—	—	—	10	5	1½
Wednesday	*Men*	8	1½	5	—	—	—	—	6	2
	Women	6	1½	6	—	—	—	—	5	1½
Saturday	*Men*	8	1½	—	—	—	12	—	6	2
	Women	6	1½	—	—	—	10	—	5	1½

"The vegetables are not included in the weight specified, which is for the meat when cooked. If it be thought desirable, ½ an ounce of butter may be given to the women, in lieu of cheese for supper.

"Old people of 60 years of age and upward may be allowed 1 oz. of tea, 5 oz. of butter, and 7 oz. of sugar, per week, in lieu of gruel for breakfast, if deemed expedient to make this change.

"Children under 9 years of age to be dieted at discretion; above 9, to be allowed the same quantities as women.

"5. DIETARY FOR ABLE-BODIED MEN AND WOMEN.

		BREAKFAST.		DINNER.						SUPPER.		
		Bread.	Gruel or Porridge	Cooked Meat.	Vegetables.	Soup.	Boiled Rice or Suet Pudding.	Bread.	Cheese.	Bread.	Potatoes	Cheese.
		oz.	*pints.*	oz.	*lb.*	*pts.*	oz.	oz.	oz.	oz.	*lb.*	oz.
Sunday	*Men*	7	1½	5	¾	—	—	—	—	7	—	1½
Thursday	*Women*	6	1½	5	¾	—	—	—	—	6	—	1½
Monday	*Men*	7	1½	—	—	1½	—	7	—	—	¾	—
Friday	*Women*	6	1½	—	—	1½	—	6	—	—	¾	—
Tuesday	*Men*	7	1½	—	—	—	14	—	—	7	—	1½
	Women	6	1½	—	—	—	12	—	—	6	—	1½
Wednesday	*Men*	7	1½	—	—	—	—	7	3	—	—	—
Saturday	*Women*	6	1½	—	—	—	—	6	2	—	¾	—

"Old people of 60 years of age and upward may be allowed 1 oz. of tea, 5 oz. of butter, and 7 oz. of sugar, per week, in lieu of gruel for breakfast, if deemed expedient to make this change.

"Children under 9 years of age to be dieted at discretion; above 9, to be allowed the same quantity as women.

"6. DIETARY FOR ABLE-BODIED PAUPERS.

		BREAKFAST.			DINNER.						SUPPER.			
		Bread.	Cheese.	Butter.	Boiled Meat.	Potatoes	Yeast Dumpling.	Suet Dumpling.	Bread.	Cheese.	Bread.	Cheese.	Butter.	Broth.
		oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	*pts.*
Sunday	*Men*	6	1	—	—	—	—	16	—	—	6	1	—	—
	Women	5	—	½	—	—	—	12	—	—	5	—	½	—
Monday														
*Wednesday	*Men*	6	1	—	—	—	—	—	6	1	6	1	—	—
Saturday	*Women*	5	—	½	—	—	—	—	6	1	5	—	½	—
Tuesday	*Men*	6	1	—	4	12	5½	—	—	—	6	—	—	1
Thursday	*Women*	5	—	½	4	12	5½	—	—	—	5	—	—	1
Friday	*Men*	6	1	—	—	—	11	—	—	—	6	1	—	—
	Women	5	—	½	—	—	11	—	—	—	5	—	½	—

"Old people, being all 60 years of age and upward:—The weekly addition of 1 oz. of tea, and milk or sugar, to those for whose age and infirmities it may be deemed requisite.

"Children under 9 years of age:—Bread and milk for their breakfast and supper, or gruel when milk cannot be obtained; also, such proportions of the dinner diet as may be requisite for their respective ages.

From these six dietaries each Board of Guardians of the Poor is required to select one most suitable to the circumstances of each Union.

It will be perceived that *beer* is not permitted unless specially ordered by the surgeon, and that the use of *tea* is confined to the aged and infirm. In all cases the sick to be dieted as directed by the medical officer.

* "1 oz. butter ordered on Wednesdays for men. Is it a typographical error?

The following table gives a comparative view of these six dietaries:

	Dietary No. 1.		Dietary No. 2.		Dietary No. 3.		Dietary No. 4.		Dietary No. 5.		Dietary No. 6.	
	Men.	Women. Children above 9.	Men.	Women. Children above 9.	Men.	Women. Children above 9.	Men.	Women. Children above 9.	Men.	Women. Children above 9.	Men.	Women. Children above 9.
Bread . . . . . oz.	84	70	112	98	139	106	116	92	98	84	102	88
Cooked Meat . . oz.	15	15	—	—	8	6	—	—	10	10	8	8
Potatoes . . . . oz.	24	24	—	—	24	24	—	—	48	48	24	24
Suet or Rice Pudding oz.	14	12	32*	20*	—	—	24*	20*	14	12	16	12
Cheese . . . . . oz.	8	8	18	4	18½	16½	14	10½	8½	8½	15	3
Meat Pudding with Vegetables† oz.	—	—	16	10	—	—	12	10	—	—	—	—
Butter . . . . . oz.	—	—	—	7	—	—	—	—	—	—	1	6
Bacon . . . . . oz.	—	—	—	—	5	4	6	5	—	—	—	—
Yeast Dumpling . oz.	—	—	—	—	—	—	—	—	—	—	22	22
Vegetable . . . . oz.	—	—	—	—	—	—	—	—	24	24	—	—
Total	145	129	178	139	187½	156½	172	137½	202½	186½	188	163
Gruel . . . . pints	10½	10½	—	—	10½	10½	10½	10½	10½	10½	—	—
Soup‡ . . . . "	4½	4½	—	—	1½	1½	6	4½	3	3	—	—
Broth . . . . "	4½	4½	—	—	—	—	—	—	—	—	2	2
Vegetables . . . "	—	—	†	†	—	—	†	†	—	—	—	—

The average weekly amount of solid food supplied by these dietaries is for men nearly 179 ounces, and for women about 152 ounces.

Dietary No. 1 - -	145 oz. - -	129 oz.
" No. 2 - -	178 oz. - -	139 oz.
" No. 3 - -	187½ oz. - -	156½ oz.
" No. 4 - -	172 oz. - -	137½ oz.
" No. 5 - -	202½ oz. - -	186½ oz.
" No. 6 - -	188 oz. - -	163 oz.
	1073	911½
Average - - - -	178 5-6 - -	152 (about)

Now, according to the result of the Commissioners of Inquiry,§ agricultural laborers are unable to procure for themselves and families an average allowance of more than 122 oz. of solid food (principally bread) weekly; and if we assume that the man consumes 140 ounces (say 134 bread and 6 meat) as his share, it is evident that his allowance would not be equal to that of the above dietaries.

* "Besides vegetables.

† "The vegetables are extra, and are not included in the weights specified."

‡ In making *soup* in the British poor-houses, besides *meat, split peas, onions* and *carrots, oatmeal, dripping, pepper, salt,* and *crumbs of bread,* are employed. For example, a pint and a half of the soup prepared at the poor-house of *St. George's, Middlesex,* contains 6 ounces of meat and bone, equal to 4½ ounces of solid meat, 1-7th of a pint of peas, 1-3d of an ounce of groats, 1-120th of an ounce of pepper, 1-15th of an ounce of salt, and 1-25th of a pennyworth of vegetables. Each pint of gruel contains 1¼ ounces of the best Berwick oatmeal; and suet puddings are composed of flour 1 lb., suet ¼ lb, water 13 oz., which yield on boiling 2 lbs. of pudding.

§ See Mr. Tuffnell's Report, in the *Second Annual Report of the Poor Law Commissioners.*

IV. AMERICAN DIETARIES FOR PAUPERS.

Notwithstanding the general prejudice against the British Poor-house system of dieting, there is good reason to believe that, as a general rule, it is equal, if not superior, both in quantity and quality, to that furnished the same class in this country. As the whole matter is regulated strictly by laws, which are enforced by the proper authority, there is but slight chance for abuses; and where they do creep in, they cannot long exist, where so prompt a remedy is at hand. In New England it is a very general practice for the different towns to put up their paupers, in general town meeting, to the lowest bidder, that is, to him who will agree to maintain them at the least expense. The consequence is, that the support of the poor is nothing more nor less than a perpetual experiment, to ascertain on how little food the soul and body of a human being may be kept together. But where this system does not prevail, the mode of living is equal, if not superior, to that in the British Poor-houses. For example, compare the following with the dietaries above given.

DIETARY OF THE BOSTON ALMS-HOUSE AND HOUSE OF INDUSTRY.

Dinners—Sunday, boiled rice and molasses; Monday, beans, baked or stewed, and pork; Tuesday, beef and soup, vegetables and wheat bread; Wednesday, baked beef, vegetables and wheat bread; Thursday, beef and soup, vegetables and bread; Friday, salt fish, vegetables and bread; Saturday, beef and Soup, vegetables and bread. *Breakfasts*—Tea or coffee, and white bread. *Suppers*—Chocolate and wheat bread. The diet of the sick is regulated by the medical attendants. The number of children in the house for the past year has been about 200, which deducted from the average number of inmates, 571, leaves 371 consumers of meat, without making any deduction for the sick in the hospital. 350 lbs. of best beef four times a week, at 4 cents per pound.

The allowance of meat for each ward is weighed off according to the number of persons, and ratably distributed among them. The bread, which contains a small quantity of Indian, is baked in the establishment. Excepting meat, there is no restriction as to the quantity of food. "No rebellions," says Dr. Smith, "are to be apprehended in the Boston Alms-house, like that which lately occurred in the Poor-house at Liverpool, because the appetite is satisfied. A story is abroad of an Irish pauper, at South Boston, who wrote home, advising his relatives to come out to this establishment immediately, as they *had meat twice a-week*. We regard the moral and dietetic regulations of the city's institutions for prisoners and paupers as superior to those of all other cities or towns in the United States."

BALTIMORE ALMS-HOUSE.

The following is the general diet of the paupers:—

For *Breakfast*—Bread, and rye coffee, sweetened with molasses; for *Supper*, bread, and tea, sweetened with sugar.

Dinner—On Monday, beef and soup; Tuesday, mush and molasses; Wednesday and Thursday, beef and soup; Friday, herring, mush and molasses, or hommony; Saturday, beef and soup; and on Sunday, pork and vegetables.

Eight oz. of beef, or five oz. of pork, are allowed each pauper on the days animal food is furnished; and to each laboring pauper twenty oz. of bread; and to all others over one year old, sixteen oz. of bread per diem.

The diet of the sick is regulated by the physicians.

PROVIDENCE ALMS-HOUSE, RHODE ISLAND.

The diet of the inmates is as follows:

For *Breakfast*—Coffee, bread and butter, one morning, and alternately milk or milk-porridge and bread.

For *Supper*—Tea, bread and butter one night, and alternately milk or milk-porridge and bread.

For *Dinner*—Sunday, flour or Indian pudding and molasses; Monday, baked beef or pork; Tuesday and Thursday, soup; Wednesday, fresh meat, baked or roasted; Friday, pork and beans; Saturday, salt fish and potatoes.

Brown bread is used by all except the sick.

ALBANY ALMS-HOUSE.

The general diet of the paupers consists of bread and bohea tea, sweetened with molasses, for breakfast; soup five days in the week, and fish and potatoes two days in the week for dinner; mush and milk, or mush and molasses, for supper.

BELLEVUE ALMS-HOUSE, NEW-YORK.

The diet in this Institution is as follows:—For *Breakfast*, bread and tea, the tea sweetened with molasses, and a little milk. For *Dinner*, on alternate days, meat and soup; of beef, 17 lbs. are allowed for 15 rations; of pork, three-fourths of a pound to each person, and about one pound of bread with potatoes; on the other days, mush and molasses with bread. For *Supper*, the same as breakfast. A woman with a child, is allowed one and a half pounds of bread per diem for both. Each woman is allowed half a pint of milk per day, and a pound of tea per month. The bread, made of wheat flour, is baked at the establishment.

BLOCKLEY ALMS-HOUSE, PHILADELPHIA.

In this institution the general diet of the inmates is as follows:—

Every day for *Breakfast*—Coffee, half rye, half imported. Every day for *Supper*—chocolate or tea; both at breakfast and supper, as much good wheat bread is allowed as they can eat.

Dinner—On Sunday, soup; Monday, half a pound of beef, of which the soup was made on Sunday; Tuesday, hash, made of the fragments of beef; Wednesday, mush and molasses. Working men receiving in addition thereto, half a pound of meat or soup; Thursday, the same as Sunday, Friday as Tuesday, and Saturday as Wednesday. Besides, potatoes or wheat bread are allowed every day for dinner.

The diet of the sick is entirely regulated by their medical attendants. No pork is used in the establishment.

V. AMERICAN DIETARIES FOR PRISONS.

The common allowance of food in our penitentiaries is equivalent to one pound of meat, one pound of bread, and one pound of vegetables, per day. In some of them it varies from this, but it is generally equivalent to it. The food is generally wholesome and well prepared. The opinion has prevailed that the convicts in our penitentiaries have *too much* food, and of a better quality than they ought to receive. This, however, is a mistake, as proved by subsequent investigation. "In the Milbank Penitentiary in Great Britain," says Mr. Dwight, the agent of the Prison Discipline Society, "an experiment has been made on MAN, as to the quantity of food necessary to keep him alive. In such extensive establishments, a step once taken may lead to fatal consequences before it can be retraced. In this establisment, near London, the advocates of a severe discipline demanded a reduction of the diet of the prisoners, and a calculation was made, about the close of the year 1822, to ascertain how little food would sustain human life. There were at that time in the prison about 800 convicts, and their diet was reduced to half a pound of bread per day, and the soup made of ox-heads, in the proportion of one ox-head to one hundred males, and the same to one hundred and twenty females. A general decay of health was apparent, but the scurvy did not appear till January, 1843. The cases of disease increased rapidly, and on the 28th of February one hundred and eighteen were sick, and on the tenth of April, more than four hundred. It was found, on inquiry, that the meat of an ox-head weighed only eight pounds, which being divided among one hundred, allows only one ounce and a quarter to each prisoner. To this diet, the College of Physicians, after long delay, ascribed the production of the disease. It became necessary, at length, to remove every prisoner from the establishment, which was done, and the whole was purified. In consequence of this sickness, the House of Commons resolved to give to the future inmates a full and nutritive diet, as to quality and amount. This experiment on human life may be of great use on this side of the Atlantic, by preventing a severity, as dangerous to life as excessive indulgence is injurious to morals. The experiment shows that eight ounces of bread and one and a quarter of meat cannot sustain life; it does not show, however, that three pounds of food per day are necessary to life and health, and it may still be a question of great importance, whether the Milbank Penitentiary was not in one extreme, and the penitentiaries of the United States in the other; so that the subject is still open for consideration and experiment, though it is apparent, from the experiment at Milbank, that it should be conducted with great discretion when human life is at stake."

Experiment at Lamberton, N. J., in relation to the Food of Prisoners.

An experiment was made a few years since upon the prisoners at Lamberton, New Jersey, confined in solitary cells, by reducing the allowance of food. The men on whom the experiment was tried, were confined the whole term of their sentence in solitary cells. Some of them had been confined eighteen months, and some two years. Their allowance of food was only half the allowance of the men who were employed in the shops, and the allowance of the men in the shops was only half a pound of meat, together with one pound of bread, one

gill of molasses, and about half a pound of vegetables per day. It is stated by the agent of the "Prison Discipline Society," that this reduced allowance had no injurious effect upon the health. "They appeared," says the Report, "as well, at least, as any class of prisoners who have been visited in this country; and the keeper, who has been thirteen years in the institution, stated, that the effect of solitary confinement, with this diet, had been very good; and that the prisoners all left the cells with a strong determination never to return to them, and no one had yet returned, nor did he believe that any one ever would return. If he was correct in this opinion—and there was every thing in the appearance and conversation of the prisoners in the cells to induce the belief that he was correct—then this mode of punishment, with a reduced allowance of food, is much better than where one-half or one-third of the whole number of prisoners are committed a second, third, fourth, fifth, or sixth time, which is the fact in several penitentiaries in the United States, where the men are fed abundantly." We may be permitted to express a doubt, in opposition to the apparent result of the above experiment, that where food is withheld to that extent as to amount to *punishment*, the health of the prisoners must necessarily suffer in a greater or less degree.

To illustrate the dietary systems in our prisons, we give the following, out of a large number which we might present, as they will serve to show sufficiently the mode of living in these establishments.

"DIETARY OF THE NEW YORK CITY PRISON.

Dinner.	Monday—Mush and molasses. Tuesday—Beef with soup and bread. Wednesday—Mush and molasses. Thursday—Fresh boiled beef, with soup and bread. Friday—Mush and molasses. Saturday—Fresh beef, and soup with bread. Sunday—Mush and molasses.
Breakfast.	Coffee, with molasses boiled in it, and bread."

REMARKS.—No other meat than beef is furnished, and this consists of hocks and the coarser parts. It is estimated that one-half the weight of the beef consists of bone; on the days, therefore, on which meat is allowed, a sufficient quantity is purchased to allow one pound exclusive of waste, to each prisoner. If more is asked for, it is allowed. There are but two meals a day, the first at nine, A. M. Dinner at half-past two, P. M. (no supper). The coffee is half rye and half coffee, (cheapest kind). The bread is made of an inferior kind of flour; looks a good deal like Graham bread, and is baked at the alms-house. No potatoes or other vegetables are furnished during about half the year, say from March to October, and the soup is made during the whole of this time from beef alone, or with (ocasionally) crumbs of bread boiled in it. The number of prisoners ranges from 130 to 180, the average being about 150. The cells are small and poorly ventilated. In consequence of recent complaints, the Commissioners of the Alms-house are making arrangements to furnish the prisoners with potatoes and rice.

The diet of this establishment is a disgrace to our city. Only think of immuring men in close stone cells, just large enough for *tombs*, as they are very properly called, and then feeding them on nothing but

coarse beef, with the water in which it is boiled, miscalled Sour, with no vegetables, and mush and molasses, on alternate days, with no suppers, and bread made of very inferior flour. The only wonder is, that the prisoners do not all die of scurvy, and they would, if they resided in the building for any length of time; as it is, the mortality is excessive A reform is loudly called for in this establishment, and we hope will not long be delayed.

BOSTON HOUSE OF CORRECTION.

The diet consists of the following materials, viz.:

18 oz. No. 1 beef, or 12 oz. pork, and 20 oz. bread per diem.
1 pint black tea for breakfast, and another pint for supper.
2½ bushels of potatoes for 100 rations.
1 quart of salt for " "
2 oz. black pepper, " "

Soup is occasionally given, with bread and potatoes. 1,610 lbs. of beef, at 4½ cents per lb., has been the weekly allowance. The average number of inmates is 291

Instead of meat each day, boiled fresh beef is now allowed three days in each week; beef soup, three days; and one day, baked beef. The allowance of meat now furnished, is 180 lbs. beef daily of the first quality, for 300 prisoners. The bread contains a small quantity of Indian, and is of the best quality. If prisoners ask for more bread than the regular allowance, it is given them. It is, however, part of an individual's punishment for disobedience of orders, to be shortened in the allowance of food. These facts are obtained from that excellent periodical, the "*Boston Medical and Physical Journal*," and are accompanied by the following remarks of the able editor, Dr. Smith:

"All experience teaches that men can be easily governed when they are well fed. The hungry are prompted, by the goadings of an empty stomach, to the worst acts in the history of our race. It is a sad mistake that the convicts in many of the penitentiaries of this country are kept at that exciting point of hunger which changes man into a devil in feeling and a brute in conduct."

VI. BRITISH DIETARIES FOR PRISONS.

As the subject of prison dietaries has hitherto received but very slight attention in the United States, we think it may be useful to show what has been done in Great Britain in relation to this matter. Of one thing we are very certain, and that is, that it should not be left to individuals who may have charge of prisoners, to decide what kind and what quantity of food shall be supplied to those under their charge; but that it should be regulated, like other matters of less consequence, by legal enactments.

"In January, 1843," says Mr. Pereira, "the Inspectors of Prisons made a Report to the Secretary of State, relative to the system of Prison Discipline, &c., in which they state that, with respect to Dietaries, they have arrived at the following conclusions:—

"1. We have framed a series of tables, according to the length of the imprisonment, the additional punishment of hard labor, and the sex of the prisoners; and, as far as practicable, with regard also to the kind and degree of discipline enforced other than hard labor.

"2. These dietaries are given as the minimum of what we recommend for each class, without reference to the local situations of the prisons, or to any

peculiar circumstances which may render an increase necessary. Such peculiarities may also render it expedient, in certain cases, to substitute other kinds of food, (of an equivalent amount of nutriment,) for some of those included in the scale of diet.

"3. The principle which we are of opinion ought to be acted on in framing a scale of prison diet, and that which we have endeavored to carry into effect, as far as possible, in the annexed scale, is, that that quantity of food should be given in all cases which is sufficient, and not more than sufficient, to maintain health and strength, at the least possible cost; and that while due care should be exercised to prevent extravagance or luxury in a prison, the diet ought not to be made an instrument of punishment.

"4. In endeavoring to ascertain the precise quantities of food which ought to be allowed to different classes of prisoners, in accordance with the foregoing principle, we have been guided by our own experience, by the opinions of several prison medical officers of long standing, and by the dietaries in use.

"5. We are of opinion that there ought always to be three meals each day in prisons, and that at least two of the three should be hot.

"6. That there should be variety in the kinds of food forming the diet, with occasional changes; and that a considerable portion of the food should be solid.

"7. That in the selection of the kinds of food, it is essential, for the maintenance of health, to include substances which are necessary for the support of the various parts of the body.

"8. That it is very important to ascertain that the water is pure and wholesome, and that there is an abundant supply.

"9. That prisoners should not be set to work immediately after any meal.

"10. That animal food should form part of the diet of prisoners employed at hard labor.

"11. That the attention of the medical officer should be directed to the scale of diet on which each prisoner is placed, and that he should have a discretionary power to increase or diminish the quantity of food ,with reference to the constitution and state of health of the particular prisoner.

"12. That with regard to age, it is only in the extremes of youth and old age that any distinction of diet is advisable, and that the discretion of the medical officer should extend to these cases."

It appears, however, that the inspectors were not unanimous as to the dietaries; and it is but fair, therefore, that the reader should be put in possession of the following *Reasons of Dissent as to the Scales of Diet* assigned by Mr. F. Hill, one of the Inspectors:—

"1. There is at present a great want of information on the subject of diet generally, both as respects the real quantity of nutriment required for health under various circumstances, and the best form in which that nutriment can be given, as regards bulk, solidity, quantity of animal matter, and the necessary variety to supply all the wants of the frame for renewing bone, muscle, &c. There is but little certain knowledge also respecting the comparative quantity of nutriment contained in substances of different kinds, such as wheaten bread, meat, and potatoes.

"2. Owing to the many circumstances which affect the natural demand for food, such as age, sex, constitution, state of health, kind and quantity of work, it is difficult, under any arrangement, to determine what quantity of food any prisoner ought to have; and it is impossible, in my opinion, to classify prisoners for this purpose, with any degree of accuracy, otherwise than by considering the case of each prisoner separately, which may be done by laying down a few scales of diet, and then empowering those who must be best acquainted with the case of each prisoner, viz., the Governor and Surgeon, to settle, from time to time, subject to the control of the visiting justices, on what scale each prisoner shall be placed.

"If a classification be made according to any one or two only of the disturbing causes, the rate of diet, if suited to the wants of a portion of the class, will, in

my opinion, be found insufficient for some and too much for others, producing injury to health in both cases, and in one waste and extravagance also.

"3. While it is right to give prisoners such a quantity of food as will keep up robust health, it is important to allow nothing beyond what is really necessary; both because excess of food is injurious to health as well as deficiency, and because the motives of honest industry will be weakened if any thing like luxury be admitted into prisons.

"4. It having been declared as a principle that the allowance of food ought not to be made an instrument of punishment, and that that quantity of food should be given which is sufficient, and not more than sufficient, to maintain health and strength, I cannot see any ground for giving less food to a prisoner who is employed at the same kind of labor as another prisoner, and otherwise similarly circumstanced with him, except that he is to leave the prison sooner, unless, as has been alleged, the expectation of a long imprisonment has a depressing effect on the mind, and that effect can be counteracted, in its influence on the health, by a greater quantity of food. Without inquiring into the accuracy of the fact, as a general rule, I cannot agree to the inference from it. I believe, on the contrary, that a depressed state of the mind weakens the digestive powers, and makes them incapable of receiving even so much food as when the mind is cheerful."

Sir James Graham, Her Majesty's Secretary of State for the Home Department, in a letter to the Chairman of Quarter Sessions, dated 27th January, 1843, adopts the recommendations of the Inspectors with regard to dietaries, and offers the following very proper observations:

"I desire to call the especial attention of the magistracy to those rules which relate to the Diet of Prisoners. On the proper adjustment of this particular, their health mainly depends; and I am convinced that the adoption of the proposed scales will prevent the recurrence of those complaints which have frequently been preferred, and in some instances justly preferred, against the prison authorities. It is by no means intended that the precise articles of food specified in the dietaries should be strictly adhered to in the table which you may adopt; other kinds of food, *containing an equivalent amount of nutriment*, may, with advantage, be substituted, when those articles which have been named are either difficult to be obtained in your neighborhood, or are considered not suited to the customs and habits of the prisoners; but that quantity of food must, in all cases, be given, which is sufficient, though not more than sufficient, to maintain health and strength at a moderate cost; and, while due care should be exercised to prevent any approach to luxurious living in a prison, the diet ought on no account to be made an instrument of punishment. I have consulted not only the Prison Inspectors, but medical men of the greatest eminence, possessing the advantage of long experience; I have carefully revised the dietaries now in use; and I have come to the conclusion—

"1stly, That animal food should in all cases form part of the diet of prisoners employed at hard labor.

"2dly, That a considerable portion of the food of every prisoner should be solid; and

"3dly, That there should be variety in the kinds of food forming the diet, and that occasional changes are necessary.

"The dietaries which I now offer for your adoption are framed on these principles, and are upheld by medical science, and by the recommendation of persons on whose authority and knowledge reliance may be placed; but they have been framed without reference to the local situations of particular prisons, or to any peculiar circumstances which may render an increase necessary; they are therefore proposed as the *minimum* amount which can safely be afforded to prisoners without the risk of inflicting a punishment not contemplated by law, and which it is unjust and cruel to inflict, namely, loss of health and strength through the inadequacy of the food supplied."

DIETARIES FOR PRISONS IN ENGLAND AND WALES,

Recommended by the Prison Inspectors, and ordered by Her Majesty's Secretary of State for the Home Department.

CLASS I.

Prisoners confined for any term not exceeding three days:

	Males	*Females.*
Breakfast.	1 pint of Oatmeal gruel,	1 pint of Oatmeal gruel.
Dinner.	1 lb of Bread,	1 lb of Bread.
Supper.	1 pint of Oatmeal gruel,	1 pint of Oatmeal gruel.

CLASS II.

Convicted prisoners for any term exceeding three days, and not exceeding fourteen days:

	Males	*Females.*
Breakfast.	1 pint of Oatmeal gruel; 6 oz. of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.
Dinner.	12 oz. of Bread.	6 oz of Bread.
Supper.	1 pint of Oatmeal gruel; 6 oz. of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.

Prisoners of this class, employed at hard labor, to have, in addition, 1 pint of Soup per week.

CLASS III.

Prisoners employed at hard labor for terms exceeding fourteen days, but not more than six weeks:

	Males.	*Females.*
	Breakfast —1 pint of Oatmeal gruel, 8 oz of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.
Sunday, Thursday,	Dinner —1 pint of Soup; 8 oz. of Bread.	1 pint of Soup; 6 oz. of Bread.
Tuesday, Saturday,	3 oz of cooked Meat, without bone; 8 oz. of Bread; ¼ lb of Potatoes.	3 oz. of cooked Meat without b'ne; 6 oz. B'd; ¼ lb Pot's.
Monday, Wednesday, Friday,	8 oz. of Bread; 1 lb. of Potatoes, or 1 pint of Gruel, when Potatoes cannot be obtained.	6 oz. of Bread; 1 lb of Potatoes, or 1 pint of Gruel when Po's. cannot be obtained.
	Supper.—Same as breakfast.	Same as breakfast.

CLASS IV.

Prisoners employed at hard labor for terms exceeding six weeks, but not more than three months:

	Males.	*Females.*
	Breakfast.—1 pint of Oatmeal gruel; 8 oz. of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.
Sunday, Tuesday, Thursday, Saturday	Dinner.—3 oz. of cooked Meat, without bone; ½ lb. of Potatoes; 8 oz. of Bread	3 oz. of cooked Meat, without bone; ½ lb. of Potatoes; 6 oz. of Bread.
Monday, Wednesday, Friday,	1 pint of Soup; 8 oz. of Bread.	1 pint of Soup; 6 oz. of Bread.
	Supper.—Same as Breakfast.	Same as breakfast.

CLASS V.

Prisoners employed at hard labor for terms exceeding three months:

	Males.	*Females.*
Sunday,	Breakfast —1 pint of Oatmeal gruel; 6 oz. of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.
Tuesday, Thursday, Saturday,	Dinner.—4 oz. of cooked Meat, without bone; 1 lb. of Potatoes; 6 oz. of Bread.	3 oz. of cooked Meat, without bone; ½ lb. of Potatoes; 6 oz. of Bread.

Monday, Wednesday, Friday,	Breakfast.—1 pint of Cocoa, made of ¼ oz. of flaked cocoa or cocoa-nibs, sweetened with ¼ oz. of molasses or sugar; 6 oz. of Bread.	1 pint of Cocoa, made of ¼ oz. of flaked cocoa or cocoa-nibs, sweetened with ¼ oz. of mo. or sug; 6 oz. of Bread.
	Dinner.—1 pint of Soup; 1 lb. of Potatoes; 6 oz. of Bread.	1 pint of Soup; ½ lb. of Potatoes; 6 oz. of Bread.
	Supper, the seven days.—1 pint of Oatmeal gruel; 6 oz. of Bread.	1 pint of Oatmeal gruel; 6 oz. of Bread.

CLASS. VI.

Convicted prisoners not employed at hard labor for periods exceeding fourteen days:

	Males.	*Females.*
	Breakfast.—1 pint of of Oatmeal gruel; 8 oz. of Bread	1 pint of Oatmeal gruel; 6 oz. of Bread.
Sunday, Tuesday, Thursday, Saturday,	Dinner.—3 oz. of cooked Meat, without bone; ½ lb. of Potatoes; 8 oz. of Bread.	3 oz. of cooked Meat, without bone; ½ lb. Potatoes; 6 oz. of Bread.
Monday, Wednesday, Friday,	1 pint of Soup; 8 oz. of Bread.	1 pint of Soup; 6 oz. of Bread.
	Supper.—Same as breakfast.	Same as breakfast.

CLASS VII.

Prisoners sentenced by Court to solitary confinment:

Males	*Females.*
The same as Class VI.	The same as Class VI.

CLASS VIII.

Prisoners for examination, before trial, and misdemeanants of the first division, who do not maintain themselves:

Males.	*Females.*
The same as Class IV.	The same as Class IV.

CLASS IX.—DESTITUTE DEBTORS.

Males.	*Females.*
The same as Class IV.	The same as Class IV.

CLASS X.

Prisoners under punishment for prison offences for terms not exceeding three days: 1 lb. of Bread per diem.

Prisoners in close confinement for prison offences under the provisions of the 42d section of the Jail Act:—

	Males.	*Females.*
Breakfast.	1 pint of Gruel; 8 oz. of Bread.	1 pint of Gruel; 6 oz. of Bread.
Dinner.	8 oz. of Bread.	6 oz. of Bread.
Supper.	1 pint of Gruel; 8 oz. of Bread.	1 pint of Gruel; 6 oz. of Bread.

NOTE.—The Soup to contain, per pint, 3 oz. of cooked meat, without bone, 3 oz. of potatoes, 1 oz of barley, rice, or oatmeal, and 1 oz of onions or leeks, with pepper and salt. The Gruel, when made in quantities exceeding 50 pints, to contain 1½ oz. of oatmeal per pint, and 2 oz per pint when made in less quantities. The Gruel on alternate days to be sweetened with ¼ oz. of molasses or sugar, and seasoned with salt.

"These dietaries," says Dr. Pereira, "appear to be well calculated to carry into effect the principles laid down by the Prison Inspectors, that the quantity of food supplied to prisoners should in all cases be sufficient, and not more than sufficient, to maintain health and strength."

(To be continued.)

PART SECOND.

Critical Analysis.

Art. IX.—*Œuvres Complètes d'Ambroise Paré. Revues et Collectionées sur toutes les editions, avec les variantes; Ornées de* 217 *Planches et du Portrait de l'Auteur; accompagnées de Notes Historiques et Critiques, et precedées d'une Introduction sur l'Origine et les Progrès de la Chirurgie in Occident du sixième au seizième siècle et sur la vie et les Ouvrages d'Ambroise Paré.* Par J. F. Malgaigne.

The Complete Works of Ambrose Paré. Revised and Collected from all the former editions, with their various readings; illustrated with 217 *Engravings, and with a Portrait of the Author; accompanied with Notes Historical and Critical; and preceded by an Introductory Essay on the Origin and Progress of Surgery in the West of Europe, from the sixth to the sixteenth century, and on the Life and Works of A. Paré.* By J. F. Malgaigne. Paris, 1841. 3 vols. 8vo. pp. 2500.

In presenting to the Profession this splendid edition of the works of Paré, M. Malgaigne, to use his own words, has erected a monument to the memory of the author, not unworthy of his fame. The introduction, by the editor, occupying some 350 pages of the first volume, is an interesting and valuable history of Surgery, from the decline of Arabic literature to the middle of the sixteenth century, and of its progress, under the hands of Paré and his contemporaries, during the remaining half of that century. In this essay, probably for the first time, we find the father of French Surgery placed in his true light; enjoying all the credit that belongs to him as a reformer and compiler; and stripped of those plumes which he never claimed as his own, yet which some of his modern admirers in his own country would fain bestow upon him. The labor of preparing this edition, of collating and compiling its diversified materials from the numerous former editions of the united works and earlier detached essays of the author, must have been, indeed, immense; and having accomplished it with accuracy, and enriched the whole with numerous and important notes, M. Malgaigne has produced what may properly be said to be the only complete edition of Paré's works that has ever yet appeared. Henceforth, then, the name of Malgaigne must be as intimately associated with that of Paré as has heretofore been the name of Guillemeau, his pupil, friend, and earliest annotator.

It would be, on the present occasion, did time and space permit, a pleasant and profitable exercise, to enter into a brief exposition of the state of Surgery about the time at which the humble youth of Laval first

entered the capital of France in search of occupation as a barber's apprentice; to follow him in his subsequent walks through the wards of Hôtel Dieu, those ancient halls, alas! now forever gone, to give place to others no longer associated with the memory of Paré, Desault, Bichat, or Dupuytren; to watch his progress in the anatomy and meager drudgery of the day, up to his admission as a master-barber-surgeon; to follow him to the camp, and, amid the stirring incidents of war, to note his anxious solicitude for the wounded, whom, after the affair of Pas de Suze, he was forced to leave undressed, for lack of the boiling oil, wherewith it was the practice of the time to cauterize all gun-shot wounds, with the view of destroying what was supposed to be their envenomed character; to observe his surprise on the following day at finding those concerning whom he had passed a restless and uneasy night, in a better condition than their comrades who had been dressed with the scalding specific; to note his rapid generalization of the discovery which led him, yet a youth, to oppose the authorities of the age, and almost immediately afterward to effect a sort of revolution in the whole system of military surgery; to stand by him at the siege of Damvilliers, where, for the first time, he employed the ligature for arresting the flow of blood after amputations, a practice which from that date superseded the ancient and cruel use of the actual cautery in all similar cases; to follow him through his numerous subsequent campaigns, amid dangers, temptations, and imprisonments; from one practical improvement, and from one useful and elaborate publication to another, until his fame at length burst forth in all its brilliancy, until the old collegiate fraternity of St. Côme stooped from its ancient usages for the honor of receiving him as one of its members, and until at last we find him at the summit of professional fame—the chief surgeon and counsellor of kings; through every change of fortune the enthusiastic cultivator of that science which his talents have so much adorned; the untiring practitioner, as ready to devote his energies to the relief of the humblest soldier as of the most illustrious chief; the unwavering man of principle, and of confiding trust in the goodness and providential care of his Creator; and who, in an age of turbulent religious excitement, without sacrificing his opinions, evinced, on every occasion, prudence sufficient to preserve himself independent of all sectarian strife. On most, if not all of these subjects, M. Malgaigne has done him full and equal justice; but such of our readers as are curious to become acquainted with the life and labors of Paré, we must refer to this introductory essay.

There is much to admire, and but little to find fault with, in this learned essay. The few errors and omissions which M. Malgaigne himself has detected, have been corrected, or supplied, in the preface to the third volume. Our hurried perusal of the work has led us to discover but one inaccuracy, and that a very slight one, in attributing to Lanfranc, a surgeon of the thirteenth century, the first description of twisting of the bones of young persons after injuries, an accident long before described by Oribasius. The only other drawback we can discover is what appears to us an overweening desire to be fastidious in the admission of facts connected with the life of Paré. Thus, after some needless labor to show that Paré was born in 1517, and not in 1509, as commonly reported, he is obliged at last to correct himself in the prefatory notices to the last volume. Again, after attempting to show, from what is evidently insufficient ground, that Paré was a believer in the doctrines of the

church of Rome, and not a Huguenot, he is after all forced to admit, that prior at least to the massacre of St. Bartholomew's, Paré had been an open advocate of Calvanism. The essay would have been still more valuable than it is, had M. Malgaigne, before closing his account of the author, given us a summary and collected view of his discoveries, inventions, and improvements in surgery. This has not been done; but in lieu of it, he has, in notes, dispersed throughout the volumes, carefully pointed out every thing that appears to have been original with Paré; and more than this, he has also, with great learning and research, pointed out the numerous authors from whom Paré has drawn so profusely in making up the diversified materials of these volumes.

Our author had not the advantages of early education; but like many other great men, both before and since his day, his want of what is usually called education, had rather a beneficial than an injurious effect in the development of his abilities. In later life, he appears to have devoted much time to study; and M. Malgaigne gives a list of more than two thousand authors, ancient and modern, with the writings of all of whom he must have been more or less familiar. He lived in an age of scholastic pedantry, the main feature of which appears to have been a blind and devoted adherence to ancient authorities; and we are not to be surprised that Paré, like Bacon, at a later period, notwithstanding his evident perception of a higher philosophy, should have been entrammeled by the prevailing doctrines of his epoch. Indeed, most that is absurd in the writings of both of these great men, is not originally their own; but it is rather the result of the opinions they imbibed in devoting themselves to the philosophy of their contemporaries. Had Paré possessed no other merit than his respect for authority, he would have long since been confounded with the host of compilers of his era—the Tagaults, the Chaumets, the Reulins. It is, as Malgaigne remarks, curious to observe him struggling and hampered in the narrow circles of their scholastic literature, seeking at every turn an outlet; and yet in venturing to lay down opinions of his own, not daring to appear too much at variance with the received doctrines, and supporting his innovations by reference to the ancients. But, growing bolder by degrees, he at length discovers that these ancients may have erred; he combats in turn Albucasis, Paulus Ægineta, Celsus, and even ventures to criticise Hippocrates himself.

It has been observed that if Paré, instead of drawing up his voluminous compilations, had given to the world a simple exposition of his own observations and improvements, he would have been of greater service to the profession. Doubtless it is easy for modern critics, in full enjoyment of the scientific treasures of the present age, to cast a look of scorn upon a work of the sixteenth century. The historian also, in tracing the progress of scientific discovery, may experience some annoyance in having to wade through innumerable details in order to emulate the original materials. In these two points of view, Paré is unquestionably prolific. But may we not be allowed to believe, with M. Malgaigne, that our author, with an eye toward posthumous reputation, labored, nevertheless, with more especial reference to the advancement of the surgery of his own times? And if all of our distinguished writers were to be judged with like severity, what would be left to us of Celsus, of Galen, of Guy de Chauliac! Even in our own day, who will say that Boyer would have done more for his own

reputation, and better for the interests of science, by condensing within a few pages the results of his own experience, than by tracing with a master's hand, in his eleven volumes, the triumphs of modern surgery?

But in order properly to appreciate the value of Paré's labors, we should remember that from the early dawn of modern learning up to the period at which he wrote, there had appeared but two works on surgery having any claim to the character of classical productions, that of Guy de Chauliac and that of Jean de Vigo, both already obsolete; and in direct opposition to the instructions in the last of which, Paré had already published in his youth the first and one of the most original of his essays, his treatise on Gun-shot Wounds. The works of Hippocrates, of Galen, of Paulus, and of other ancient writers, it is true, had of late been much in vogue among the schoolmen; but their counsels had as yet never been fairly put to the test by every-day practitioners. Italy, Germany, and France, had already used their efforts for this purpose unsuccessfully. Paré, after forty years of labor and renown as a practitioner, succeeded in giving to these ancients the authority they deserved, by supporting them with his own. By him, and by him alone, says M. Malgaigne, was Hippocratic surgery implanted in France, afterward to extend to Flanders, to England, and even to Germany, in which last-named country it had to struggle against the doctrines of Paracelsus. The labors of Paré would also have had their influence in Italy, had not a rival fully worthy of him soon afterward arisen there, in the person of Fabricius ab Aquapendente.

In France, Paré was the chief of a brilliant school, formed mostly by his personal teaching and examples. But the genius which inspired the master failed to animate his followers; and two generations had scarcely passed, ere his lessons were lost upon them. Even the college of St. Côme, which owed much to his connection with it, and which, from an insignificant fraternity, had, after a struggle of three centuries, risen into consequence, and begun to look upon itself as in some degree the rival of the medical faculty of the university, found itself, soon after the death of Paré, unable to contend against internal disputations on the one hand, and the encroachments of the barber-surgeons on the other. It continued to decline until at length in 1655 the whole body, with the provost at the head of them, relinquished their dignity, formally petitioned for the privilege of opening shops and of practising as barbers. Turpitude unparalleled! exclaims M. Malgaigne, and a climax worthy of their three centuries of despicable intrigues, profound ignorance, grovelling and contemptible selfishness! To the honor of French surgery, however, be it added, that a few such men as Mariceau and Dionis, protesting against this baseness, separated themselves forever from their unworthy colleagues: and still preserving their ancient title of *Chirurgien Juré*, they continued to devote themselves to science and the new philosophy, and to smooth the way for the brilliant advances of the eighteenth century, of which they proved themselves the worthy precursors.

But in returning to the volumes now before us, we have room for but little more than a mere enumeration of their contents. Nor is it necessary, at this late era, to enter either into a critical or analytical review of them. The professional memoirs, as published in the present edition, occupy twenty-seven distinct books; which have been arranged under the heads of Anatomy, Surgery, Obstetrics, Internal Medicine,

Materia Medica, and Medical Jurisprudence; and to these are affixed, first, the author's celebrated apology, in reply to the criticisms of Gourmelon, including an account of his travels; and, lastly, a memoir on subjects of natural history, to which is appended his book on monsters.

The treatise on anatomy occupies the first four books. It long ranked, after the author's death, as a work of merit second only to that of his contemporary, Vesalius.

The thirteen following books are exclusively devoted to Surgery: Tumors in General; Tumors in Particular; Wounds in General; Wounds in Particular; Gun-shot Wounds; Contusions, Burns, and Gangrene; Ulcers, Fistulæ, and Hæmorrhoides; Bandages, Fractures, and Luxations; Surgical Operations, and some of the disorders requiring them; Venereal Diseases and accidents resulting from them; and the means of hiding or removing deformities, whether congenital or acquired. Many of these memoirs are wholly original, and all of them are illustrated and enriched with the results of the author's own experience.

The eighteenth and nineteenth books are devoted to obstetrics and to the history of monstrosities. The latter, of course, is filled with ridiculous absurdities that passed under the name of science at the time at which it was written.

The next five books are occupied with subjects more strictly medical, as Fevers, Arthritic Disorders, Small-pox, Measles, Lepra, and Verminous diseases; Empoisoning and injuries inflicted by venomous and rabid animals, and the Plague; and to these are added a few memoirs on less important subjects.

The twenty-fifth and twenty-sixth books are taken up with Materia Medica and Pharmacy; and in the last, or twenty-seventh book, we have a treatise on Medical Jurisprudence—a branch of medical science which Paré may be said to have created.

The foregoing enumeration includes all his strictly professional works. The book of animals belongs to natural history; and it is now of no further use than to show the low state of general knowledge at the period when it was composed. The Apology and Travels, however, must be looked upon as one of the most interesting memoirs in the whole collection. It is written in a style peculiarly quaint, graphic, and agreeable. Its lets us fully into the habits and character of the author, and gives the circumstances connected with many of his most important improvements, discoveries, and triumphs in surgery. It has served, and may still serve, as a pattern for other memoirs on military surgery; it is the acknowledged prototype of those of Larrey. Finally, it was written during that period of life in which a little spice of garrulity, and of fondness for detailing the adventures of one's earlier years, is no longer disagreeable; for Paré lived to an advanced age, and this was the last of his productions.

Before closing this hasty notice, we would take occasion to congratulate the professional brethren on what appears to be a growing taste for consulting the writings of the earlier fathers of medicine and surgical science; among whom, after the lapse of three centuries, we may well be allowed to place the present author. There was a time during which more deference was paid to the opinions of the older writers than to nature and observation; and this was due, perhaps, to the fact, that the men of those days lived during the infancy of modern science, and had not as yet the ability, or at least were unprepared, to

interrogate nature for themselves. To this period succeeded a long interval of neglect toward ancient authority, arising partly from the circumstance that men were now prepared to observe for themselves, and partly from discovering that in the works of these fathers, there was as much to reject as to confirm by their own experience. A better age we trust is now at hand, when with a just appreciation of the advantages of personal observation, as well as of the superior merits of many of our modern writers, we may nevertheless find time and inclination to trace alleged discussions to their fountain-head; to give the ancients credit for all the truths they have taught us, and for all that we can find in them of what is currently passing for modern innovation. With an insight into what has already been effected or attempted, we may be enabled to check the too prurient desire of almost every tyro in the profession, to strike off into some new line of what he calls his own, either in practice or in the fabrication of instruments, or in imagined improvements; many of which a little research would have shown him to have been, perhaps more than once already, attempted and rejected.

There is now in progress a new edition of the works of Hippocrates, with a French translation, by M. Littre; and Malgaigne has promised us a series, which will include most of the Arabic and Arabistic authors. The re-appearance of these old works, many of which, especially in this country, are so rare as to be almost inaccessible, will confer an absolute boon upon us. It will furnish the materials for much useful and agreeable reflection; and it may be the means of saving for the pockets of some of our needy brethren the heavy tribute they are annually paying into the patent-office. J. W.

ART. X.—*Transactions of the Medical Society of the State of New York.* Vols. 5. from 1832 to 1843. 8vo. pp. 2143. Published by order of the State Medical Society.

ALTHOUGH the origin of the *Art of Healing* is lost in the depths of an unrecorded antiquity, yet we know, as the preservation of health and the cure of diseases have always been objects of the highest importance, that it must, in every age and country, have been cultivated with more or less success. Le Clerc, indeed, discusses with no little ingenuity the question, "*si la Médecine est venue immediatement de* DIEU?"—whether the science of Medicine is a direct emanation from Heaven? He seems, at all events, to have traced the practice of Medicine in its several branches to the days of our first parents, inasmuch as he comes to the conclusion that Adam must of necessity have been the first Physician, Surgeon, and Accoucheur. That the proficients in this art and science have always been much sought after and honored, is proved by the Bible as well as by Homer; and even among our wild, uncultivated Aboriginals, the "medicine-man" holds a high rank, and is revered as a sacred personage. In view of this high importance of the Healing Art to the dearest interests of man's social relations, it has been, from the earliest times, encouraged and controlled by governmental regulations.

Considering the subject in this light, the State of New York has wisely regulated the practice of medicine by legal enactments, which are intended to secure to the community the services of competent practitioners, and to the latter that position and respectability in society which such qualifications may justly claim. Hence, the results must be mutually beneficial in proportion as these objects are attained, constituting by no means a monopoly in favor of the physician, but holding out a reward according to his deserts.

Now the structure of our medical laws is based upon associations for mutual improvement; and to reach this end, the institution of medical societies holds out the best prospect of success. Medical science consists of the deductions warranted by a vast aggregation of facts and observations relative to the animal economy in health and disease; and all these facts and observations, before we can arrive at confident conclusions, must be so generalized as to present the results of *universal* experience. Independent of the experience of others, no practitioner, notwithstanding the possession of an intellect of the highest order and of a vast accumulation of the well-observed facts of a long life, can be considered equal to the recent graduate, with little experience, but who has availed himself of these advantages. Besides, it is due to his fellow-beings, on the score of humanity, that his knowledge should be imparted to the world; for otherwise he would have lived in vain as regards all future time, the hoarded treasures of his god-like intellect perishing with his corruptible body.

Over the vast chaos of isolated facts which have accumulated for centuries in the records of medicine, some master-mind, applying the appropriate key of knowledge, has occasionally shed the light of beauty and order; but it is seldom, indeed, that the book of nature is thus opened to our view, these numberless facts being unsusceptible of general application from the single circumstance that they possess no *uniformity*. It is only within quite recent years, that, by the application of the doctrine of averages, important relations have been disclosed discoverable in no other way. Although all researches connected with the laws of vitality are attended with many inherent difficulties, yet the application of the principle of the numerical mode of analysis, gives to medical inquiries the same character which pertains to statistical investigations on other subjects. Instead of being bewildered by contradictory conclusions, based on the few cases which fall under the observation of particular practitioners, we are enabled, by thus accumulating a vast aggregation of facts, extending through a series of years and over vast masses of individuals, to deduce the laws by which the operations of nature are controlled.

In medicine, as in every other science based on observation, all facts do not admit of generalization; but this, instead of arising from their incapability of being so reduced, is perhaps entirely due to the imperfection of our knowledge. Hence, the records of medicine have always consisted of anomalies and inferences, blended with matters of fact and correct generalizations; but in proportion as medicine advances as a science, must the former decrease and the latter increase, as a necessary consequence.

It is thus apparent that the personal observations of a single individual, cannot be of much avail in determining those laws by which the *opprobria medicorum* may be erased from the page of medical science. To-

ward the accomplishment of this grand object, no institutions known to our laws, save that of the Medical Bureau of the Army, possess greater facilities than well-organized medical associations; as, for instance, the State Medical Society of New York, composed of the County Medical Societies. After leaving the medical schools, practitioners, absorbed in the sober realities of *practice*, are too apt to sink into a state of unconcernedness as regards the advancement of the profession as a science; but as members of medical societies, the feelings of the ardent student are revived; and in proportion as we realize the insufficiency of our present knowledge, incitements will not be wanting to stimulate our exertions. In this associated capacity, much may thus be realized; while at the same time, social intercourse and friendly relations, instead of envy and personal hostility, which too often exist, will be materially promoted. Thus will the members of a liberal profession do justice to themselves by becoming more useful and respectable; and in proportion as the standard of medical character is elevated, must public esteem and confidence be secured.

Let us now make a few brief suggestions as regards the objects which should engage the attention of our medical societies, glancing, at the same time, at the contents of the 2143 pages before us.

In the annual history of every practitioner there must necessarily occur at least one case, that would be calculated to afford useful practical knowledge, or serve to illustrate an important principle. Now, if such a case were detailed by each member of a medical society, and made the subject of free remark in a friendly spirit, the result could not but prove highly useful,—useful in proportion as the impressions produced by such discussions are more deep and enduring, than those left by the simple perusal of the same case.

These societies, then, are accessible to the mass of the profession, their advantages being extended to the *operative* members, as distinguished more particularly from those who *teach and write, as well as work practically.* This exclusively *working* class, indeed, find here an ample field to display their peculiar qualifications. For example, as fashion is scarcely less imperious in medicine than in the cut of the garb of a Broadway *belle* or *beau*, so we find a remedy disused by one generation, which had been most highly vaunted by the preceding one; and again, new remedies are being constantly introduced to the notice of the profession, which are extolled, in the highest degree, by their discoverers. As the reputation of the latter, however, often prove evanescent, they are consequently always looked upon with distrust by the experienced practitioner; and hence the adoption of a truly valuable therapeutic agent, will often experience an indefinite postponement. Now, it is those who constitute the mass of all medical societies—practical physicians—who possess all the information requisite, by a free interchange of opinions, to determine the exact value of these newly proposed therapeutic means.

Let us now survey the general character, or rather complexion, of these volumes:

The contents of Vol. I., 1832–3, consist of the following papers:—1, A Prize Dissertation on Delirium Tremens, by Dr. J. C. Cross, of Kentucky; 2, Annual Address on Puerperal Fever, by Dr. J. Eights; 3, Medical Topographical Report of the County of Kings, by a Committee, consisting of Drs. Zabriskie, Garrison, and Fanning; 4, Requisitions for Graduation in the different Medical

Colleges, and Requisitions to Practise Physic and Surgery in the various States, etc., of the Union, by a Committee, consisting of Drs. T. R. Beck, Wendell, and Ludlow; 5, A Supplement to the last; 6, Annual Address on Asiatic Cholera, by Dr. Thomas Spencer; 7, Medical Topographical Account of the County of Saratoga, by Dr. E. Porter; 8, Report on Cholera made to the Governor, by Dr. L. C. Beck. There is also an Appendix to this volume of eighty-eight pages, comprising fifteen different subjects immediately connected with the interest of the State Medical Society; such as Laws of the State of New York, relative to the medical profession; System of Medical Ethics; Circular on a Medical Topographical Survey of the State, etc., etc. This last certainly had in view a most praiseworthy object, the design being to procure from every county medical society a topographical survey of the respective counties, which were to have been submitted to a committee of the state society, "charged with the duty of examining such reports, and of arranging the most interesting facts in them, and from the whole, to make a general report, containing a digested abstract, accompanied with a topographical map of the state." This was surely a noble project, and had it been since carried out in all its details, which are of too extended a nature to be here inserted, the results at this day would have been of incalculable importance, placing the medical profession of this state far above the *confrères* of all its sister states.

The contents of Vol. II., 1834-5, are as follows:—1, Annual Address on Dysentery, by Dr. T. Spencer; 2, Medical Topographical Report of the County of Columbia, by the Medical Society; 3, Medical Topographical Report of the County of Madison, by Dr. A. Foord; 4, Observations on the use of Cold Applications in local Inflammations, by Dr. C. Waldo; 5, On the use of Opium in Bowel Affections, by Dr. C. King; 6, On the utility of Iodine in cases of Ununited Fractures, by Dr. W. Willoughby; 7, Report relative to the Epidemic Cholera in the Auburn and Sing Sing State Prisons, by Drs. J. G. Morgan, and A. K. Hoffman; 8, Prize Dissertation on Typhus Fever, by Dr. A. Y. Magill, of Virginia; 9, The Physiology of Respiration and Chemistry of the Blood, applied to Epidemic Cholera, by Dr. B. F. Joslin; 10, Report on the Medical Botany of the town of Hamilton, Madison County, (Part I.) by Drs. J. S. Douglass, and J. Babcock; 11, Essay on Hygeia, by Dr. E. Porter; 12, Medical Topographical Report of the County of Onondaga, by the Medical Society; 13, Essay on Cholera, by Dr. J. R. Manley; 14, Essay on the History, Preparation, and Therapeutic Uses of Iodine, by Dr. S. J. Hobson. This volume has also an appendix of thirty pages.

The contents of Vol. III., 1836-7, comprise the following papers:—1, Annual Address on the Derangement of the Digestive Organs, by Dr. J. Steele; 2, Medical Topographical Report of the County of Tompkins, by the Medical Society; 3, Report of a Committee of the Society, (consisting of Drs. J. McCall, J. Eights, W. Bay, and T. R. Beck,) on the Varioloid, and the means of counteracting its Progress; 4, Annual Address on the Progress of Medicine in this State, by Dr. James M'Naughton; 5, On the Influence of Trades, Professions, and Occupations in the United States, in the production of Diseases, by Dr. B. W. M'Cready; 6, Medical Topography of the County of Tioga, by Dr. W. Bacon; 7, Memorial on the subject of Cholera, and the means of mitigating its violence, (addressed to the State Legislature,) by Dr. J.

R. Manley; 8, Observations on the Causes of the large proportion of Still-born Children in our large Cities over that of London, by Dr. S. W. Avery; 9, An Essay on Typhus Fever, by Dr. J. Fountain; 10, Directions for the Establishment and Government of a Lunatic Asylum, translated from the French, by Dr. E. Q. Sewell; 11, Physiological Explanation of the Beauty of Form, by Dr. B. F. Joslin; 12, Statistics of the Deaf and Dumb in the State of New York, the United States, and in various Countries of Europe, by Dr. T. R. Beck; 13, Statistics of the Blind in the United States, as ascertained by the census of 1830, by Dr. T. Romeyn Beck; 14, Observations on some of the Injurious Effects of the Secale Cornutum, by T. Chavasse, Esq., Surgeon, Birmingham, England. An appendix follows of thirty-six pages.

Among the contents of Vol. IV., 1838-9-40, we find the following papers:—1, Annual Address on the Homœopathic System of Medicine, by Dr. J. M'Naughton; 2, Observations on Prolapsus Uteri, with reference to the Modus Operandi of Dr. Hull's Utero-Abdominal Supporter, by Dr. J. F. Gray; 3, Statistical Observations on the number of Blind in Pennsylvania, and the United States, by S. Hazard, Esq., of Philadelphia; 4, Annual Address on Quackery, by Dr. L. Hull; 5, Address before the Tompkins County Medical Society, on Spinal Diseases, by Dr. A. Church; 6, Address before the Tompkins County Medical Society, on Quackery, by Dr. A. Church; 7, Address before the Tompkins County Medical Society, on Medical Societies, by Dr. D. D. Page; 8, Address before the Tompkins County Medical Society, on Observation, by Dr. D. D. Page; 9, Prof. Caspar on Suicide and its increase at the present day, translated from the German, by H. B. Webster; 10, Statistics of the Medical Colleges of the United States, by Dr. T. Romeyn Beck; 11, Annual Address on Improvements in Medicine, by Dr. L. Hull; 12, Report on Medical Education, by a Committee of the State Medical Society; 13, Prize Dissertation on Diseases of the Spinal Column, by Dr. N. S. Davis; 14, Address before the Chenango County Medical Society, on the Improvement of the Profession, by Dr. W. D. Purple; 15, Case of Sudden Death from Rupture of the Spermatic Vein, by Dr. J. M'Naughton. Appendix of 84 pages.

The contents of Vol. V. 1841-2-3, are as under:—1, Annual Address on Inflammatory Fever, by Dr. S. Ely; 2, Prize Dissertation on the Nervous System, by Dr. N. S. Davis; 3, Observations on Ergot, by Prof. J. B. Beck; 4, Observations on Aneurism, by Dr. P. Portal; 5, Address on Hereditary Diseases, before the Rensselaer County Medical Society, by Dr. Daniel Haynes; 6, Annual Address on American Medicine before the Revolution, by Prof. J. B. Beck; 7, Review of Marshall Hall's views on an Excito-Motory System of Nerves, by Dr. N. S. Davis; 8, Observations on the Signs of Live and Still-birth, by Prof. J. B. Beck; 9, Annual Address on Typhoid Fever, by Dr. W. Taylor; 10, Homœopathy Illustrated, by Dr. T. W. Blatchford; 11, Insanity, its Causes, Pathology, and Treatment, by Dr. C. B. Coventry; 12, Medical and Topographical Sketches of Binghampton, etc., by Dr. N. S. Davis. Appendix of 132 pages.

We have thus furnished a catalogue of the papers contained in these volumes, with the view of showing their general character. Many of them undoubtedly possess a full share of merit, and are peculiarly appropriate to the position in which they are found. Those on medico-topography pertain strictly to the investigations incumbent on medical

societies; and we must here repeat our regret that the requisitions of the Circular, dated June, 1830, relative to a medico-topographical survey of the state, have never been complied with in the several details. In reference to meteorological observations, it is true, their absence here has been supplied by the reports of the Regents of the University; and as regards physical features, these too have been furnished by the recent geological surveys. Now, if accurate reports were annually made upon the endemic diseases of each county, much light might ultimately be thrown upon the subject, as respects the influence of climate, in connection with the modifications induced by clearing the forest and by difference of soil, upon diseases both *endemic and epidemic*. But there is one subject which has been almost entirely passed over in these papers, viz., *American medical botany*, which presents a fertile, and, at the same time, a comparatively unexplored field of inquiry, and one, too, that has the strongest claims upon our medical associations.

Among other papers that we look upon as especially valuable and appropriate, are three by T. Romeyn Beck, M. D., viz., "Statistics of the Deaf and Dumb in the State of New York, the United States, and in various countries of Europe:" "Statistics of the Blind in the United States, as ascertained by the census of 1830:" and "Statistics of the Medical Colleges of the United States." And in the fifth and last volume, which, by the way, is the best among them, there are three papers by John B. Beck, M. D., to which we refer with particular pleasure, viz., "Observations on Ergot:" "Annual Address on American Medicine before the Revolution:" and "Observations on the Signs of Live and Still-birth." Dr. Davis's papers are also very good.

It is thus sufficiently obvious, in view of what has been already accomplished, that vastly much more may still be effected; for as every locality has its endemic diseases, which it is the duty of the physician, both as regards the public interest and the benefit of the profession generally, to investigate with all his powers of research, this subject alone, so inviting in its nature, takes away from every medical man all excuse for remaining one of the drones of the great professional hive. No local soil can claim the *plant of medical improvement* as indigenous; and in this respect, the soil of our own country is exceedingly fertile, asking only for the culture of this plant, the labors of its votaries.

"All may not," as Dr. Cowan observes, "have either the time or the courage that is necessary for statistical analysis, but each would reap much practical convenience from the daily registration of cases, and by collecting materials which the diligence of others might afterwards explore and fructify. * * Were sound practical men, instead of descending in silence to the tomb, to leave behind them the details of the forms of remedies on which they have principally relied, and a brief reference to the diseases most benefitted by their use, more good would result to the healing art than by any other method we are aware of; and the conclusions deducible from such extensive and concurrent testimony, would be practically sounder and more worthy of confidence than those arrived at by the solitary efforts of even the most gifted and accurate observers."

ART. XI.—*Medical and Physiological Commentaries.* By MARTYN PAINE, M.D., A.M. New York and London: 1840. 2 vols. 8vo., pp. 1531.

Essays on the Philosophy of Vitality, as contradistinguished from Chemical and Mechanical Philosophy, and on the Modus Operandi of Remedial Agents. By MARTYN PAINE, A.M., M.D., Prof. of the Institutes of Medicine and Materia Medica in the Medical Department of the University of New York; Member of the Verein für Heilkunde in Preussen, etc. New York: 1842. 8vo., pp. 70.

ADHERING, as we do, to the school of vitalists, as contradistinguished from those who regard the human organization as a "*chemical laboratory,*" we took decided ground, in our previous Number, when noticing the able "*Critique on Liebig's Animal Chemistry,*" by Professor Caldwell. We then expressed an intention to resume the consideration of this subject in reference to the same "Critique;" but, as that design will be carried out hereafter by one peculiarly competent, we now propose taking a glance at the writings of Dr. Paine, so far as the doctrines of vitality are concerned.

Dr. P., it will be seen, in fact anticipates the whole chemical theory of Liebig, as set forth in his Animal Chemistry. This he does not only in his "*Essay on Vitality,*" in which he controverts some of the German professor's opinions, advanced in the "*Organic Chemistry applied to Agriculture,*" but likewise in his "*Medical and Physiological Commentaries,*" published before the appearance of either of Liebig's works.

We admire the mottoes prefixed to the Essay on Vitality; and among these, we would quote the two following:

"We must never forget that it is *principles*, not phenomena, *laws*, not insulated independent facts, which are the objects of inquiry.—HERSCHELL's *Discourse*, &c., p. 13.

"A single just principle in our science will lead to more truth, in one year, than whole volumes of uncombined facts will do in a century."—RUSH. *Medical Inquiries*, vol. IV. p. 43.

It is this feature, indeed, that characterizes all Dr. Paine's writings, ever preferring the illustration of principles in the generalization of facts to the mere accumulation of disconnected details. Regarding the doctrines of vitality as contradistinguished from those which respect inorganic nature, as lying at the foundation of all medical philosophy, as well as of all practical medicine, he carries out in this "Essay" the illustration of an important and fundamental principle, previously brought under notice in his "Commentaries," viz., "*a deduction of the doctrines of the vitalists from the phenomena that attend the development of the incubated egg.*"

"It is also," he says, "one of my present objects to extend the application of the foregoing principle, and to consider—

1st. The constitutional nature of the ovum.

2d. To show farther by the philosophy of generation, and by the nature of the powers which are universally admitted to be alone concerned in developing the germ or ovum, and in forming the organs of the new being, that the *same* powers are, also, *alone* concerned in carrying on forever afterwards the processes of life, and, of course, that no new powers, or principles, are introduced.

3d. To consider the manner in which the germ is impregnated, or its vital

properties so stimulated into action, as to result in the development of the germ, and in unfolding the various attributes of the new being.

"4th. To show that we may find in the physiology of generation, or the principles through which the ovum is impregnated, the whole philosophy of organic life, or the principles through which the actions of life are forever carried on.

"5th. To state the manner in which the natural peculiarities of each parent, whether as it respects the properties of life, or the physical conformation, are infused into the germ and combined in the full-grown offspring.

"6th. To show that hereditary diseases are transmitted in the same way as those more natural peculiarities which belong to parents.

"7th. To show, also, that the principles which are concerned in the transmission of hereditary diseases are the same as concur in the production of ordinary diseases.

"8th. To deduce from the philosophy of generation the vital nature of hereditary diseases; or, in other words, to show that the morbid impression is established upon the vital properties of the ovum, and of course, upon those of the new being; and that the hereditary vitiation does not consist in any transmitted impurity to the blood or other fluids of the offspring, as is now supposed by the humoralists, and the fallacy of which I have endeavored to establish in my Essay on the 'Humoral Pathology.'

"In considering the questions before us, we are but employed in tracing nature into one of her thousand labyrinths, whose exploration only requires us to avoid speculation and take nature for our guide; and here it must be our first object to interrogate her as to the constitution of the ovum, that we may ascertain by what powers its development is accomplished. At this elementary step of our being, no philosophical mind can doubt that all the component parts of organic beings are wholly different from the ordinary combinations of chemistry, and, therefore, that they are effected by powers with which chemistry has no connection. Such being granted, analogy does the rest for the whole organic fabric." (*Essay* p. 11.)

Without following our author in his ingenious train of reasoning, we must be content to present the following beautiful argument:

"Such, then, is the history of the development of the germ in birds, and in all the higher animals; and the whole work is ascribed by physiologists of every denomination exclusively to principles unknown in the inorganic world, and wholly distinct from any of a chemical nature. They are called, indiscriminately, vital properties, vital powers, vital principle, organic force, creative force, &c., terms, as we have just seen, employed either by Professor Müller or Dr. Roget or Carpenter, to distinguish the principle, or properties, from every thing that has any known existence in inorganic substances, or as the source of any inorganic results. But, physiologists of the chemical school stop here, and ascribe all organic compounds after the being is fully formed to chemical agencies. It is remarkable, however, that it has not occurred to these philosophers, that precisely the same elementary combinations, the same formation into tissues, and the same secretions take place at all stages of the elementary development as at all future periods of life, and that the rudimentary development consists in those formations of simple compounds and their union into tissues; and if the early or rudimentary growth of the being, all its secreted products, all its elementary combinations, be determined by the vital properties, so are the *same* results determined by the same properties or powers forever afterwards. To call in the agency of chemical or physical forces, to accomplish *precisely* the same results at any future stage of the organic being as are admitted to be performed in the development of the 'essential parts' of that being by the vital principle or vital properties alone, is not only a violation of the plainest rule in philosophy, but of the clearest facts.

"We have thus before us a peculiar order of powers by which the organic being is developed, fashioned, and forever exclusively governed. It is these

powers, about which physiology, pathology, and therapeutics, are essentially concerned. We may, therefore, seek in the composition of organic beings, and in the laws of their development, for the whole rudimentary principles of medicine. The vital principle has also the extraordinary task of laying out, in the ovum, the whole organization of the future being, — so that its subsequent labor must be comparatively simple; and it is then, least of all, that it can require any help from the forces of the inorganic kingdom, or that it would permit a violation of the great principle in nature, of avoiding an unnecessary multiplication of causes.

"It may be farther shown, by the incipient development of the ovum, that the vital powers, or properties, are more concerned in the growth, nutrition, and all the subsequent physical results, throughout the whole existence of the being, than is generally supposed by even the exclusive vitalists. The usual supposition is that the vessels or instruments of action, which are moved by the vital powers, perform the work of decomposing the blood and other parts, and recombining them again in other proportions and forms, according to the particular organization of parts, and the modification of their vital states.* But according to all physiologists, the ovum, in its germinating part, is a mere organic fluid, destitute of vessels, and all other physical parts of the future apparatus.

"'That the form,' says Müller, 'of the organic matter does not determine originally the mode of its action, is proven indisputably by the fact, that the matter from which all animal forms are produced, are at first almost without form.' 'The germ is a round disk of simple animal matter,' &c."

"The first 'assimulation of new matter,' therefore, must take place without the agency of vessels, or any of the parts which are subsequently formed; and therefore, the same powers which converted the fluid germ into vessels, nerves, &c., continue to make the same conversions out of blood; and as all this was originally done without the aid of vessels, so must the same process be forever carried on without their *direct* agency. Nothing in mathematics can be more certain, and nothing, therefore, is more incontrovertible. (*See the last note.*)

By the same rule it may be at once shown that the only ingenious chemical hypothesis ever invented to interpret organic results, — the *catalytic*, — is purely an assumption; since this hypothesis is predicated of the blood vessels. But, there being no vessels in the germ, the first vessels must, of course, be produced without the supposed chemical influence of vessels, and by my showing, therefore, as to the subsequent formation of vessels and other parts, the supposed agency of catalytic forces is a mere assumption. (*See Med. and Phys. Commen.*, vol. 1, p. 74–76.)

"By thus reducing this question, which is apparently surrounded with difficulties, after the animal acquires its complex structure, to its simple elements, the obscurities disappear; since what is true of the development of the germ must be equally true of the *same* processes and results in after life.

"The question then arises as to what is the particular office of those vessels where the elementary combinations and decompositions take place? Simply this, to convey and eliminate through the agencies of the vital properties, those parts from the blood out of which the vital properties effect the new elementary combinations, whether solid or fluid, — to aid in arranging the new

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* It is affirmed, however, by a very eminent chemical physiologist that —

"The most determined skeptic cannot assert that there is any necessary relation, or, indeed, *any relation whatever*, between the mechanical arrangements and the chemical properties to which they administer. There is *no reason* why the chemical changes of organization should result from the mechanical arrangements, by which they are accomplished [!] neither is there the *slighest reason* why *the mechanical arrangements*, in the formation of organized bodies, *should lead to the chemical changes of which they are the instruments.*" ! — '*Dr. Prout. Bridgewater Treatise, ch.* 4.' Such is the proof which chemistry offers.

molecules, — or to carry forward those fluid products which may be destined for other ends.

"But have not the nerves an indispensable agency in effecting the elementary combinations and decompositions? Certainly not, for the reasons which I have now stated in relation to the vessels; and this induction concurs with all other facts, and overthrows the hypothesis that the nerves are conductors of galvanism, and, therefore, the supposed agency of this fluid in the processes of life."—P. 18.

There is something truly happy in the idea that the germ possesses "a creative force," by which new matter from without is assimilated; and as this germ in all animals, so far as is known, is, according to Müller, "a round disk of simple matter, having no difference of form corresponding to the difference of animals," it follows necessarily that nature, from apparently the same germinal elements, elaborates all the varieties of organic life. Moreover, as the process of generation results in the production of organic beings similar to those which exercise the generative faculty, we have a still further illustration of the peculiarities of the vital properties. That a special influence is exerted by the semen of the male upon the living properties of the germ, is evident in the resemblance borne by the offspring to the male parent; and this is still further demonstrated in the transmission of the peculiarities of the male, in the instance of the production of animal hybrids. And here Dr. Paine introduces a fact equally extraordinary and interesting:

"The well-known fact, that when the Earl of Morton's Arabian mare was covered by the quagga, not only did the mule so begotten partake of the character of the sire, but when the mare was subsequently submitted to an Arabian stallion, by whom she had three foals at different times, the first two continued to exhibit some of the distinctive peculiarities of the quagga conjoined with the characters of the Arabian breed."—(MONTGOMERY, *on the Signs and Symptoms of Pregnancy*, p. 17. London, 1837.)

This phenomenon can of course find an explanation only in the supposition that the semen "may influence several ova, and so continue to manifest its effects in the offspring of subsequent conceptions when impregnation has been effected" by males of a different species.

Thus, too, must be explained the transmission of hereditary diseases on the part of the male; and if so, we have here a key, in the beginning of individual existence, to the whole philosophy of disease, as well as to that of physiology.

"The type of all this may be found in the impregnated ovum. The properties which animate the germ *before* conception are entirely determined by the vital constitution of the female parent. But we have seen that the new being may partake of the physical characters of the male as well as of the female, and it not unfrequently happens that the characteristics of the male are predominant. Hence it follows that the semen so far establishes changes in the original constitution of the vital properties of the germ.

"Since, therefore, all the fœtal developments, and all their physical peculiarities, depend upon the precise modifications and actions of the vital properties, and since these properties in the unimpregnated ovum are entirely determined by the female parent, their nature after impregnation must be more or less affected, and assimulated to the peculiar nature of the male parent, in all the cases where the offspring manifests any of the male characteristics. This is entirely analogous, in principle, to the modifications which are produced in the properties of life by morbific causes, but with this difference in

contingencies. In the case of the impregnated ovum, the modifications are permanently established, and can never be altered, so far as the vital properties, in either parent, upon which the modifications depend, are fundamental in their nature. In the case of the morbific agent, or the cause of disease, the vital properties are diverted from the healthy state, and from *such* modified conditions they commonly possess the ability of escape, and of returning again to their natural standard. In the case of the impregnated ovum, a modifying agent operates, whose properties are intended to confer on the new being a stable condition, however they may modify the exact constitution of the impregnated germ. This vital stimulus, the semen, therefore, in virtue of its specific properties bestows upon the corresponding vital properties of the ovum the peculiarities which belong to itself; and these being natural, vital, and determinate, the transmitted peculiarities should be equally so. In the case of disease, however, the morbific agents have none of the properties of life which are natural to the fecundating semen, and the modifications, therefore, which they may determine may be different, even if we suppose them to act, as in the case of the germ, upon the whole constitution. Whatever modifications, therefore, may arise from their action, they must consist of deviations from the standard of health. But it does not necessarily follow that certain artificial modifications may not be as permanent as the natural ones; and it is from observation alone, that we learn that they are so."—P. 26.

In this manner it would appear that hereditary diseases are propagated from the male; and, in some instances, so great is this natural diathesis, that tubercles have been found deposited in the lungs even of the still-born infant.

Now, would Liebig thus create an animal in the laboratory? He claims at least that "*by chemical agency we can produce the constituents of muscular fibre, skin, and hair!*"

Dr. P., as we conceive, has thus successfully shown that the development of the germ, in all the higher order of animals, is the result of principles wholly unknown in the inorganic world, and equally distinct from any of a chemical nature; and, on the contrary, as these phenomena are the products of a vital principle, it follows that he is fully warranted in the conclusion, that what is true of the development of the germ, "its conversion into its vessels, nerves, &c., must be equally true of the same processes and results in after life."

The nature of this vital or organic principle will, no doubt, forever remain one of the most hidden arcana of creative wisdom. We have here arrived at an ultimate fact; and until organic chemistry shall *at least* teach Liebig to detect in the atmosphere the cause of variola or of influenza, or to discover a difference between a watery solution of gum Arabic and the poisonous fluid of a serpent, which last chemical analysis proves to be the same, it were worse than idle to attempt the discussion of the far more recondite question of the nature of the vital principle.

"We need not inquire," says Dr. P., "into the nature of the nervous power, or of the organic properties. It would be as absurd as to interrogate the nature of gravitation, or of any other property of mere matter, or even of matter itself; though we may well say what the nervous and organic powers *are not*, and thus save much speculation and its resulting practice. We know enough of the whole, for all the purposes of philosophy, and for the good of mankind, by the phenomena alone; but since the phenomena of organic beings are far more diversified than those which relate to inorganic matter, so, also, should we be as contented with the former as with the latter, and apply them in the same philosophical and practical manner. We also know enough of physics to marvel at nothing in organic beings which may be utterly different from the con-

stitution, the phenomena, and the laws of inorganic matter; and if it seem mysterious that such an agent should exist as the nervous power, with the characteristics which I have here assigned, it will become less wonderful when we reflect upon the phenomena of the immaterial mind in its connection with organization, as in voluntary motion, blushing, palpitation, syncope, apoplexy, &c., or even upon the velocity of light and the unconceivable rapidity of its undulations, and, above all, that it is not an improbable doctrine, that the light, heat, and deoxydizing property of the solar beam, reside in a common principle, and are due to modifications of that principle by foreign influences. So, also, in respect to the modified developments of the common agent upon which the phenomena or electricity and galvanism depend."—P. 50.

These same doctrines pervade the whole of the "Medical and Physiological Commentaries." Indeed, we may say that they stand forth boldly on every one of the fifteen hundred and thirty-one well-filled pages. In volume I., the first section consists of one hundred and twenty pages on the "*Vital Powers.*" Section II., on the "*Philosophy of Blood-letting,*" containing two hundred and sixty-two pages, is also designed "to reflect some light upon the nature of the *vital forces*, which we have just considered—since we have endeavored to show that the effects of blood-letting are wholly incapable of explanation upon any principles in physics." Section III., comprising three hundred and thirty-two pages upon the "*Humoral Pathology,*" opens thus—"Having hitherto investigated the character of the *forces and actions of life*, we are better prepared for considering the important subject of the humoral pathology." Volume II. opens with a section of seventy-eight pages on "*Animal Heat,*" which ought to be a terror to all chemico-physiologists. Next follows the "*Philosophy of Digestion,*" treated in sixty-two pages; and here we cannot refrain, seeing that this process is almost by common consent consigned to the laboratory, from laying before our readers several of the first paragraphs on this subject:

"Having hitherto seen that the various processes of life, and all their results, whether healthy or morbid, with the single exception of digestion, depend exclusively upon powers which have no analogies in the inorganic world, but with which they hold an absolute hostility, we might safely conclude that the same powers are equally concerned in the initiatory step which prepares the material for all their subsequent operations. Yet, is this especially the ground upon which chemistry has reared its batteries, and from which it sends forth its artillery into the various dominions of the organic world. Yet, is it here, that vitality is exemplified in its most impressive and astonishing aspects, and where unequivocal demonstrations abound, that fluids, as well as solids, are endowed with the principles of vital operations. Finally, it is here, especially, that nature has illustrated her distinction between the animate and the inanimate world, and established her chain of connection.

"The chemical doctrine is thus laid down by one of the most able and illustrious in the field of science. It has also the merit of being set forth to illustrate 'the Power and Wisdom of God.'

"'1st. The stomach,' says Dr. Prout, 'has the power of dissolving alimentary substances, or, at least, of bringing them to a semi-fluid state. This operation seems to be altogether chemical.

"'2d. The stomach has, within certain limits, the power of changing into one another, the simple alimentary principles;' and 'this part of the operation of the stomach, appears, like the reducing process, to be chemical; but not *so easy of accomplishment.* It may be termed the *converting* operation of the stomach.

"'3d. The stomach must have, within certain limits, the power of *organizing* and *vitalizing* the different alimentary substances.' 'It is impossible to

imagine, that this organizing agency of the stomach can be chemical. *The agency is vital, and its nature is completely unknown.*'"*

"We would first inquire, although not very relative to our subject, how the foregoing account of the process of digestion enlarges our views of the 'Power and Wisdom of God,' any more than the ordinary process of putrefaction? Nor is this at all an extravagant comparison; for it has been seriously affirmed by the chemists, that the putrefaction of a muscle results in a substance resembling chyme.† It is certainly true, also, that the same Power was necessary to establish those agents upon which putrefaction depends, as the more exalted powers of life; and the same Omnipotence is as positively manifested in an insect as in man. But the finite comprehension of the human mind is just as much enlightened as to the Power of Omnipotence by the contemplation of an ascending series of principles upon which the various phenomena of nature depend, as by tracing the analogous illustrations of Power from the simplest elements of matter up to the most perfect of sensible existences. It appears to us, indeed, that it is rather the laws, than the mechanism of nature, which most excite our adoration of its Author. There is more to admire in the operation of the principles which unite into atmospheric air and nitric acid the elements of which they are composed, than in the elements or the combinations themselves,—more in 'the music of the spheres' than in the vast sublimity of the individual objects,—more in the powers which carry on the functions of organized matter, than in the organization itself. What were nature without its animation? But this is nothing more than an emanation, in connection with matter, from the forces which we are considering."—Vol. II. p. 80.

The next section is on "*The Theories of Inflammation*," containing seventy-four pages; and here again we would present to our readers a word or two of the introduction, in illustration of Dr. Paine's staunch advocacy of the doctrines of vitalism:

"It is usual, at least with many, to begin the consideration of the theory of inflammation with an account of the blood-vessels, the circulation of the blood, and other anatomical facts, and to bring up the preface with a multitude of experiments where nature may be seen in her most artificial aspects; but, most of all, with microscopical explorations. To the latter, under the auspices of the physical theories of life, are owing, mainly, the mechanical doctrines of inflammation. Since the time of Hunter and Bichat, we hear but little about the philosophy which relates to the vital powers, either in the processes of disease, or in the healthy actions of the system. Consequently, the inquiry is apt to terminate in the simplicity of physical results.

"The human organization is either regarded as 'a chemical laboratory,' or, 'our philosophy would teach us that there is but little difference between a man and a sieve.' The mechanism is considered the agent itself; while the invisible existence which truly presides over all the movements of life, and whose phenomena are so multifarious as to defy enumeration, and which no other power can resolve, is ridiculed as a creation of fancy, because, like the more sensible parts, it is not a subject for the scalpel or the microscope. (See Vol. I. pp. 11, 33, 36, 75, &c.)

"In prosecuting our inquiry, we shall be content with the knowledge that the process of inflammation is conducted by blood-vessels and other inscrutably organized instruments; but most of all, that these instruments are actuated in all their movements and results by powers which have no analogies in inorganic matter. And were it our specific purpose to construct a theory of inflammation, we would take especially the vital phenomena as the basis. To these we would make the physical appearances subordinate; yielding their aid where susceptible of interpretation by our standard of life."—Vol. II. p. 141.

"* Chemistry, Meteorology, and the Function of Digestion, considered with reference to Natural Theology. b. iii. c. 3.

"† Dr. Davy, ut cit."

Lastly, we have a section of not less than four hundred and twenty-six pages on the "*Philosophy of Venous Congestion*," which is thus introduced to the reader:

"We have reserved for this place the important subject of Venous Congestion, that we might have all the advantage of any light that may be reflected by the examination which we have bestowed upon the natural and modified powers and actions of life in our preceding investigations.

"We have hitherto seen that it is the prevailing disposition of the age to refer the phenomena of organized beings, whether in health or disease, to the agencies of chemical or mechanical powers; but most of all to the former. This error, as we have endeavored to show, has its deep foundation in confounding the vital with the properties of dead matter, and in yielding the senses to the illusions of the microscope, or to mistaken analogies in chemical science. Mechanics have been largely introduced 'to circulate the blood,' and in some diseases, as in inflammation and its consequences, it is the principal fulcrum. But we now approach an affection in which we lose sight of chemistry, and all vital agencies, and surrender the science of life to an unadulterated mechanical philosophy. Here we have 'nothing but stagnation,' (p. 145, *note*,) and the modus operandi of all our remedies is construed upon physical principles."—Vol. II. p. 216.

This volume concludes with two other essays, making one hundred and seventy-five pages, the one entitled "*Comparative Merits of the Hippocratic and Anatomical Schools*," and the other, "*On the principal Writings of P. Ch. A. Louis, M.D. etc.*"

We have thus accomplished two objects,—the one was to show that the author of this work fairly stands at the head of the school of vitalists, and the other was to lay before our readers a general view of the contents of the "*Medical and Physiological Commentaries.*" Let it not be thought, because we say nothing in condemnation of this work, that we have never read the "British and Foreign Medical Review." Notwithstanding the harsh criticisms with which it has been visited, we hesitate not to say, that as a book of erudite and extensive research, clothed in language beautiful and precise, it will bear most favorable comparison with the medical writings of any age or country.

On page 391 of volume I., there occurs the following paragraph, which, judging from the sensation produced on ourselves, cannot fail to make even a Stoic smile:

"We certainly do not intend to review the reviewers. This, we admit, would be indecorous, and beyond our province, since it is conceded that they possess a 'final jurisdiction.' Besides, we are single-handed, and have nothing but facts for our weapons. The contest, therefore, would be manifestly unequal; and being so, we have long since made up our minds 'that discretion is the better part of valor.'"

Now, kind reader, to whom do you suppose that this remark refers? To the "*British and Foreign Medical Review*," edited by JOHN FORBES, M.D., etc.!!

We will conclude by giving one extract more from our author's "*Philosophy of Animal Heat:*"

"It is our purpose to examine the connection of respiration with animal heat, and to show its essential dependence on other causes by the experiments of chemical philosophers. We shall endeavor to sustain the conclusions of Hunter and Bichat, although we see much to admire in the ingenious observations of those who depart from the doctrine of the vitalists. But, it is the ingenuity

of mind, not its adherence to nature, which imparts, in our estimation, the merit that may belong to other hypotheses. And here their advocates have an apparent intellectual superiority over others who are alone concerned in forming their deductions from the phenomena of nature. The proofs, which the latter enjoy, are so plain and intelligible, that one seems scarcely deserving praise who does but follow their indications. And this, we apprehend, is one reason why so little respect is now paid by many to the system of nature as expounded by Hippocrates, Bacon, Sydenham, Hunter, Bichat, and other kindred spirits. On the contrary, however, artificial hypotheses, to be at all plausible, often require the highest efforts of genius; and this is at once conspicuous in the management of facts, and the arrangement of assumptions, so that they shall borrow, as it were, a light from the facts. We have only to adduce the subject before us in illustration of our principle. To have inferred the dependence of animal heat upon vital actions from the plain phenomena of life, from the analogies supplied by all other formations of the body, from the forces upon which it depends resisting all those causes which extinguish heat in inorganic matter, and from a like coincidence in respect to the operation of all chemical and physical forces upon the living organism, would constitute but little merit, compared with that complex system by which the chemical doctrine has found its way to popular favor. Just so it is with the more extended plan of subverting the most sublime department of nature, where every thing is carried on by forces unknown in the inorganic world, and of substituting the laws of that world from which the former appears so remarkably exempt. The chemical hypothesis of respiration is only a part of the great plan of subversion: that of digestion is another; in a word, the spontaneous generation of animals sums up the whole. Who could acquire any eclat by simply maintaining that the gastric juice performs digestion in virtue of its vital forces, and thus, also, bestows the first act of vitalization; that the vessels then take up and complete the work of animalization; that the secretions depend upon the same forces, and so on? On the other hand, however, it requires a power not inferior to that of the Creator Himself, to bring about a single one of the foregoing results by the agency of the chemical or any other physical forces. The temptation, therefore, is very great to wander from the luminous path of nature, But when this path shall have become universally abandoned, as at former eras, he will receive and deserve the greatest meed of praise, who, like Bacon, shall restore the Hippocratic method of induction. At present, however, there are some, who, it seems to us, adhere with great tenacity to the path of nature; and, until this is lost, the discovery of which we speak cannot, of course, happen; and when it comes, there will be but few to enjoy the honor. But, when the light shall have once more been diffused, and great principles again established, and new avenues to honor must be struck out,—and seeing, also, that our chemical hypotheses of life will be as unprofitable to our successors as alchymy to us, what new systems may be invented, we will scarcely presume to foretel. All that we can say of them is, they will make a great noise in the world, will triumph for awhile, and again have their exit. *Sic ibimus, ibitis, ibunt.* It is plain, therefore, should the rest of the world endure as long as it has hitherto, according to the geologists, there will only be now and then one whose name will be imperishable. Or, if, like Paracelsus, and others not to be named, a straggler should gain a niche, he will be rather cast there by the eccentricity of his orbit, than by any of those movements that are at all subject to calculation. "*Sic itur ad astra.*"—Vol. II. p. 12.

In one sentence of this extract—"*All that we can say of them is, they will make a great noise in the world, will triumph for a while, and again have their exit*"—our author seems to have been gifted with the ken of prophecy. He appears to have viewed in prophetic vision—"*Organic Chemistry in its Application to Physiology and Pathology.*"

Should our readers regard this article, as well as the one in the last Number on "*Physiology Vindicated,*" as a declaration of war against

Liebig, they may find us in the next Number actually "carrying the war into Africa."

We look upon Dr. Paine as the prince of vitalists, and we will say of him, in good faith, as the braggart Paracelsus said of himself:

"Get behind me, Avicenna, Galen, Rhazes, Mesue, Montagnana! behind me, Doctors of Paris, Montpelier, Suabia, Cologne, Misnia, and Vienna! You, Islands of the Sea! Thou, Italy; thou, Athens; thou, Greek; thou, Arab; thou, Israelite!—behind me! FOR THE MONARCHY IS MINE!"

ART. XII.—*A Treatise on Food and Diet, with Observations on the Dietetical Regimen suited for the disordered states of the Digestive Organs; and an Account of the Dietaries of some of the principal Metropolitan and other Establishments for Paupers, Lunatics, Criminals, Children, the Sick, etc.* By JONATHAN PEREIRA, M.D., F.R.S., and L.S., Licentiate of the Royal College of Physicians in London, etc., etc. Edited by Charles A. Lee, M.D. New York: J. & H. G. Langley, 57 Chatham street. 1843. 8vo. pp. 325.

THIS work, which exhibits a detailed and individual account of alimentary substances, is one whose merits, both as regards its immediate practical utility and its general character in the way of elaborate research, cannot fail to gain it a place not only in the library of the physician and general scholar, but upon the counter of the apothecary,—ay, and even upon the shelf of the kitchen.

This treatise on Diet possesses certain merits unknown to its predecessors, to some of which reference may here be made. The subject of the chemical elements of food, upon which much light has been thrown by the recent investigations of Liebig, Boussingault, and Dumas, has been quite fully treated; and this is a feature which is quite novel, all preceding dietetical writers having passed it over altogether, or at most alluded to it only incidentally. Another peculiarity is found in the increased space devoted to the consideration of alimentary principles. A third peculiarity consists of the plan, adopted from Tiedemann, of treating separately *Alimentary Principles* and *Compound Aliments*, contrary to the arrangements of foods according to the proximate or immediate principle predominating in their composition. But as regards the further improvements in the mode of considering this subject, we will allow the author to speak for himself:

"Such a classification [the arrangement of food last mentioned] is open," he says, "to the glaring and obvious objection, that most of the foods in ordinary use consist of several alimentary principles. Thus, *butchers' meat* consists of fibrine, albumen, gelatine, and fat; *bread*, of starch, gluten, gum and sugar; *milk*, of caseine, butter, and sugar. Now, to arrange meat among fibrinous, bread among starchy, and milk among caseous foods, is to overlook the other important constituents of these substances, and to give a very imperfect view of their alimentary properties.

"The author did not venture, without considerable hesitaton and doubt as to its propriety, to deviate from Dr. Prout's beautifully simple and generally admitted classification of alimentary principles, into the *aqueous*, the *saccharine*, *albuminous*, and the *oleaginous*. After mature consideration, however, he satisfied himself of the impossibility of reducing all nutritive principles to these

four heads. Common salt, for example, which a recent writer* justly observes, 'can by no means be considered only as a luxury, but as a substance as essential to life as nitrogenous or non-nitrogenous food and water,' can be referred to no one of these four classes. Moreover, lemon juice, which constitutes one of our most valuable antiscorbutic foods, does not owe its efficiency to water, sugar, albumen, or oil. Furthermore, to call gum, starch, and acetic acid, *saccharine* substances,—gelatine an *albuminous* one,—or alcohol an *oleaginous* one, is to assign new meanings to common and familiar terms. Gelatine and albumen are not mutually convertible into each other by any known chemical process, nor can oil be transformed into alcohol, or, *vice versâ*, alcohol into oil. For these reasons, therefore, the author has ventured to adopt a new and enlarged arrangement of alimentary principles, which he now submits to the notice of his professional brethren.

"Considerable pains have been taken in the preparation of Tables representing the proportion of some of the chemical elements, and of the alimentary principles contained in different foods; and the author believes they will be found as complete and accurate as the present state of our knowledge admits.

"Another peculiar feature of this treatise is the chapter on Dietaries, which has been rendered necessary by the discussions which have been going on, for many months past, in the public journals and elsewhere, respecting the amount of food proper to be supplied to paupers, prisoners, and others. The subject has in this way forced itself on the attention of all grades of society; and professional men and others must have long felt the want of a work giving an account of the dietaries in use in the various Public Establishments in this country, as well as in the Navy and Army. The author greatly regrets that the necessarily limited extent of the present treatise has precluded him from entering into a variety of interesting details connected with this subject."

Upon the last subject—the chapter on *Dietaries*—we deem it quite unnecessary to dwell, as the reader will find a most excellent view of it among the original communications of this Number, furnished by Dr. Lee himself.

Dr. Lee, by the way, in a highly complimental letter from the truly distinguished author, who is never at a loss to discern true merit where it exists, requested him to make such additions as would render it better adapted to the peculiar wants of the American reader. But as the American editor has presented, in a very short preface, an admirable view of the claims that this work has upon public attention, we will of course lay it before the reader:

"In complying with the request of the Author of the following work, to make such additions as would better adapt it to the wants of the American reader, it was far from my design or expectation to extend my remarks so far, or to comment on such a variety of topics. The subject of 'food and diet' is, however, so extensive, embracing such a multitude of facts and not a little of theory, as to embarrass by its very copiousness,—so that the chief difficulty of one who enters upon this boundless field, is, to know where to begin, and when to stop. My object has been, chiefly, to notice those topics upon which additional information would, perhaps, be considered desirable by the American reader; and, while I left the text entire, to offer such brief comments as some reading and reflection would naturally suggest. This plan was also in accordance with the wishes of the publishers. Such notes, therefore, as have been added, will be found either at the bottom of the page, or in the Appendix.

"With respect to the merits of this treatise, it is scarcely necessary for me to speak. It fully meets a desideratum which modern discoveries, the improvements in practical and experimental physiology, and especially the late achievements in analytic chemistry, have created; and which, since the appearance of Liebig's remarkable works, every one must have felt could not long remain un-

* *On Gravel, Calculus, and Gout*, by H. Bence Jones, M.A., p. 46. London 1842.

supplied. On perusal of these pages, the reader will doubtless agree with me in opinion, that the task could not have fallen into abler hands, as it certainly could not have been accomplished, in all respects, in a more satisfactory manner. The author, Mr. Pereira, is well known throughout Europe and America, as one of the most learned, scientific, and practical men of the age,—a physician of great experience and accurate observation,—a highly successful writer, unsurpassed in the judicious selection and arrangement of facts, and in the felicity of his illustrations and reasonings. To the medical profession especially, he is universally and most favorably known, as the author of the best work on the *Materia Medica* which has hitherto appeared in our language. With such rare qualifications, he could hardly fail in producing a most valuable treatise; and, as such, we commend it to the favorable consideration of the public, as no less adapted to inform the physician and man of science, than to interest and instruct the general reader."

Part I. treats of Foods; and these the author classifies thus:

The substances employed by man as food consist of certain compound bodies, termed *Alimentary principles*, which, by their mixture or union, constitute our ordinary foods; these, for the sake of distinction, I shall denominate *Compound Aliments*.

Thus meat (a compound aliment) consists principally of fibrine, albumen, gelatine, hæmatosin, fat, and water, (alimentary principles.) Wheat (a compound aliment) is composed of starch, gluten, sugar, and gum, (alimentary principles.)

Alimentary principles are themselves compounded substances. They consist of two, three, four, or more, *simple* or *undecompounded bodies*, usually denominated *elements*. These are the *Chemical Elements*, or *Elementary Constituents of Food*.

Thus fibrine (an alimentary principle) is composed of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulphur, (chemical elements.) Gum (an alimentary principle) consists of carbon, hydrogen, and oxygen, (chemical elements.)

I propose, therefore, to consider successively—

1. The Chemical Elements of Foods.
2. Alimentary Principles.
3. Compound Aliments.

Of the Chemical Elements of Foods. Of the fifty-five bodies regarded as *simple* or *undecompounded*, only nineteen have been found in *Organized* or *Living Bodies*. The elementary substances—elementary because they have never been proved to be compound—are the following:

1. Carbon	6. Sulphur	11. Flourine	16. Iron
2. Hydrogen	7. Silicon	12. Potassium	17. Manganese
3. Oxygen	8. Chlorine	13. Sodium	18. Aluminum
4. Nitrogen	9. Iodine	14. Calcium	19. Copper?
5. Phosphorus	10. Bromine	15. Magnesium	

Copper, Dr. Pereira thinks, is probably only an accidental constituent; while gold, lead, and arsenic, which have been declared to be constituents of organized bodies, he has not included in his catalogue.

"A living body," he says, "has no power of forming elements, or of converting one elementary substance into another; and it therefore follows that the elements of which the body of an animal is composed must be elements of its food.

"The essential constituents of the human body are thirteen; and the same, therefore, must be the elements of our food.

CHEMICAL ELEMENTS OF THE FOOD OF MAN.

1. Carbon	5. Phosphorus	8. Chlorine	11. Potassium
2. Hydrogen	6. Sulphur	9. Sodium	12. Magnesium
3. Oxygen	7. Iron	10. Calcium	13. Flourine.
4. Nitrogen			

These substances are next noticed individually; and the amount of knowledge thus communicated,—knowledge, too, which is known to him only who has kept pace with the most recent extraordinary advances made in these departments of science,—is almost incredible; but, for a detail of these valuable facts and deductions, we are obliged to refer the reader to the volume itself.

In treating here of Carbon, notwithstanding an admirer of Liebig, Pereira is compelled to disagree with him in his ascription of the gluttony of certain nations to the coldness of climate exclusively:

"In the natural and healthy condition of the system, the food supplies the necessary carbon for the support of animal heat; but when food is withheld, the fat of the body is consumed, its carbon being converted into carbonic acid, its hydrogen into water. Experience has satisfactorily shown that the heat of the blood in health is the same in all climates and in all conditions of atmospheric temperature. Now it follows that a larger quantity of combustible matter is required in cold climates and cold weather, for keeping up this temperature, than in hot climates and warm weather; since a greater amount of heat must be given off to surrounding media in the former than in the latter. Hence the necessity for a more liberal supply of food in cold weather. 'He who is well fed,' observes Sir John Ross,* 'resists cold better than the man who is stinted, while the starvation from cold follows but too soon a starvation in food. This, doubtless, explains in a great measure the resisting powers of the natives of these frozen climates; their consumption of food, it is familiar, being enormous, and often incredible."† Moreover, it is obvious that the foods which, theoretically, appear to be best suited for the inhabitants of those colder climates, are those which contain the largest amount of carbon and hydrogen,

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"* *Narrative of a Second Voyage in Search of a Northwest Passage*, page 200. London, 1835.

"† Most persons are familiar with the accounts which have been published respecting the gormandizing powers of the natives of the Arctic regions. Captain Sir W. E. Parry (*Second Voyage for the Discovery of the Northwest Passage*, p. 413, London, 1824,) states that, as a matter of curiosity, he one day tried how much food an Esquimaux lad, scarcely full grown, would consume, if freely supplied. 'The under mentioned articles were weighed before being given to him; he was twenty-four hours in getting through them, and certainly did not consider the quantity extraordinary:'

	lbs.	oz.
Sea-horse flesh, hard frozen .	4	4
ditto boiled . .	4	4
Bread and bread-dust . . .	1	12
Total . . .	10	4

The fluids were in fair proportion, viz.	
Rich gravy Soup, . .	1 1-4 pint
Raw spirits, ...	3 wine glasses
Strong grog, ...	1 tumbler
Water	1 gallon 1 pint.

"Sir John Ross (*Narrative*, p. 448, 1835) says, that an Esquimaux 'perhaps eats twenty pounds of flesh and oil' daily.

"But the most marvellous account of gormandizing powers is that published by Captain Cochrane, (*Narrative of a Pedestrian Journey through Russia and Siberian Tartary*, vol. i. p. 255, 3d edit. 1825.) He says that the Russian Admiral Saritcheff was told that one of the Yakuti consumed in twenty-four hours 'the hind-quarter of a large ox, twenty pounds of fat, and a proportionate quantity of melted butter for his drink.' The admiral, to test the truth of the statement, gave him 'a thick porridge of rice, boiled down with three pounds of butter, weighing together twenty-eight pounds, and although the glutton had already breakfasted, yet did he sit down to it with great eagerness, and consumed the whole without stirring from the spot; and except that his st mach betrayed more than ordinary fulness, he showed no sign of inconvenienc- or injury!!' Captain Cochrane also states (p. 352) that a good calf, weighing about two hundred pounds, 'may serve four or five good Yakuti for a single meal.' In another place (p 255) the same traveler observes that he has repeatedly seen a Yakut or Tongouse devour forty pounds of meat a-day; and, he adds, 'I have seen three of these gluttons consume a rein-deer at one meal.'

viz., the fats and oils, which contain from 66 to 80 per cent. of carbon. The celebrated traveler just quoted, further remarks, 'that in every expedition or voyage to a polar region, at least if a winter residence is contemplated, the quantity of food should be increased, be that as inconvenient as it may. It would be very desirable indeed, if the men could acquire the taste for Greenland food, since all experience has shown that the large use of oil and fat meats is the true secret of life in these frozen regions, and that the natives cannot subsist without it, becoming diseased, and dying, with a more meager diet.'

"The effect of cold in augmenting, and of heat in diminishing, the appetite for food, is well known. I will not, however, go the length of Liebig in asserting, that if we were to go naked, as the Indians, or if in hunting or fishing we were exposed to the same degree of cold as the Samoyedes, we should be able to consume the half of a calf, besides a dozen of candles.* For though it must be admitted that the inhabitant of a frozen region requires more abundant food than he who lives in a temperate climate, yet it is an error to ascribe the voracity and gormandizing powers of some of the natives of the colder regions to the influence of cold only. The Hottentots and the Bushmen [Bosjesmans]† of Southern Africa, indulge, as is well known, in beastly gluttony, yet this cannot be the effect of the temperature of their climate; while 'the inhabitants of the Alpine regions of Southern Europe demand no such extravagance of food, nor are even the people of Lapland and the northern extremity of Norway conspicuous for such eating; as is not less true of the Icelanders.'‡ Instead, therefore, of ascribing the gluttony of the inhabitants of frozen regions solely to the low temperature to which they are exposed, I consider it to be in part the result of an instinct or propensity exercised by some portion of the brain. Phrenologists place *alimentiveness* or the *organ of the propensity to eat and drink*, 'at the base of the middle lobe of the brain, adjoining and immediately below the situation occupied by the organ of destructiveness in carniverous animals.'§ But while I entertain no doubt of the existence of such a propensity, I do not wish to offer any opinion as to the precise seat of it within the skull. To varying degrees in the power and activity of this propensity I ascribe the greater or less fondness for good living evinced by different individuals. It is well known that some persons are notorious, among their friends and acquaintances, for their gormandizing propensity, while others are commonly reputed as being little eaters. Similar differences are observed between different nations. 'The great difference which exists between the French and Germans, in the organs of alimentiveness, accounts for the difference between the two nations in sobriety. After the Spaniards, no nation in Europe is more sober than the French; while the Germans are essentially great feeders. Among a pretty considerable number of German, Spanish, and French soldiers, who were in the same hospital at Caen, I have observed,' says Dr. Vimont, 'that a remarkable difference

"* *Annalen der chemie und Pharmacie*, vol. xli. Liebig, or his translator, seems to have had some misgivings about the '*half of a calf*,' since, in the English translation, I find '10 *pounds of flesh*' substituted.

"† Barrow (*Account of Travels into the Interior of Southern Africa*, vol i. p. 152. 1801) says that the Hottentots are 'the greatest gluttons upon the face of the earth. Ten of our Hottentots,' he adds, 'ate a middling- sized ox, all but the two hind legs, in three days; but they had very little sleep during the time, and had fasted the two preceding days. With them the word is to eat or to sleep. When they cannot indulge in the gratification of the one, they generally find immediate relief in flying to the other.'

"The same authority, when speaking of the Bosjesmans, (*op. cit.* p. 288,) says that they are equally filthy and gluttonous with the voracious vultures. 'The three who accompanied us to our wagons had a sheep given to them about five in the evening, which was entirely consumed by them before the noon of the following day. They continued, however, to eat all night, without sleep and without intermission, till they had finished the whole animal. After this, their lank bellies were distended to such a degree that they looked less like human creatures than before.'

'‡ Sir J. Ross, *op. supra cit.* p. 447.

"§ *A System of Phrenology, by George Combe*, p. 230, 4th ed. Edinburgh, 1836.

existed among them in regard to the faculty in question. A light soup, some fruit, or a little meat, was sufficient for the Spaniards; the repast of the French consisted of three-fourths of the portion; while the Germans swallowed the whole allowance, and continually complained that they did not receive enough of meat and potatoes. Every time I happened to pass the wards where the Germans were placed, I was certain to be assailed by the words *flesh, flesh, sir!*"*

"Much less heat is evolved when there is a deficiency of food. During the whole of our march,' observes Sir John Franklin,† 'we experienced, that no quantity of clothing could keep us warm while we fasted, but on those occasions when we were enabled to go to bed with full stomachs, we passed the night in a wram and comfortable manner.' In tropical climates, and even in cooler regions during the summer, a smaller quantity of food suffices to keep up the temperature of the body, and under the same circumstances, substances containing a less proportion of carbon are better adapted for the preservation of health.'"

In regard to an *organ of alimentiveness*, the American editor adds the following judicious note:

"The best-informed physiologists of the present day admit, with our author, the existence of an organ of *Alimentiveness*, or *Organ of the Appetite for Food*, though they are not exactly agreed as to its precise location. The far-reaching sagacity of Gall perceived that the appetite for food is an instinct, not referrable to any of the recognised principles of mind, and therefore must be a primitive power, and, like the other faculties and instincts, must owe its existence and exercise to some definite portion of cerebral matter. Dr. Hoppe of Copenhagen followed up the suggestion of Gall, and showed very conclusively, that, besides the nerves of the stomach and palate, an affection of which gives rise to the sensations of hunger and thirst, there must also be an organ in the brains of animals for the instinct of *nutrition*, (taking nourishment for the preservation of life,) which incites them to the sensual enjoyments of the palate, and the activity of which is independent of hunger and thirst. 'How,' says he, 'should the mere sense of hunger, more than any other disagreeable or painful sensation, make the animal desire food, the necessity of such not being known to him by experience? This could only be effected by *instinct*, because, either an instinct, *i. e.* the immediate impulse of an organ, or else experience and reflection, are the causes of all actions.' Hunger and thirst are, therefore, to be discriminated from the desire of food called *appetite;* the former being an affection of the nerves of the stomach and palate, caused by deficiency of necessary supply; but appetite is an activity of a fundamental instinct, which has in the brain an organ analogous to those of the other faculties and instincts. Mr. George Combe, during his late visit to the United States, spoke as follows, in one of his lectures, in relation to this subject:

"'Observations made by various individuals have proved that there is in man an organ of appetite for food, situated in the zygomatic fossa. The stomach is to this organ what the eye is to the sense of seeing. Cut off the communication between it and the brain, and the appetite will be lost. A dog was kept without food till he was ravenous with hunger; the pneumogastric nerve was then divided, and the sensation left him at once. A number of cases have occurred in which a gluttonous appetite existed during life, and these convolutions were found, after death, ulcerated. Dr. Caldwell thinks the burning desire of the drunkard to arise from disease of this organ, and recommends it to be treated with bleeding, cold water, quiet, and attention to diet.

"'That this is the organ of alimentiveness has been confirmed by Vimont, and since coming to this country I have seen two strong proofs of it in the collection of Dr. Morton of Philadelphia; one, the skull of a Dutch admiral who died at Java in consequence of excessive eating, in which the organ is very

"* Dr. Vimont, quoted by Mr. G. Combe, in his *System of Phrenology*, p. 765.

"† *Narrative of a Journey to the Shores of the Polar Seas, in the years 1819 to 1822*, p. 424. London, 1823."

much developed; but it is still larger in the skull of a convict of New South Wales, who inveigled seven people into the woods at various times, murdered and ate them.'

"Mr. Combe gives many examples of enormous eating, and refers them all to an inordinate development of the organ of "Alimentiveness," which he considers as fully established."

Having completed his most erudite view of the chemical elements of foods, our author next considers the *Alimentary Principles:*

"Two or more of the undecompounded bodies, described in the last chapter, form, by their union with each other, certain compound substances, termed *Alimentary Principles*, or *Simple Aliments;* and, by the combination or mixture of the latter, our ordinary foods, called Compound Aliments, are formed.

"Some alimentary principles contain two elements only, as Water. Others contain three, as Sugar and Fat. Proteine is formed of four elements, while Fibrine and Albumen contain six.

"Some alimentary principles, as Water and common Salt, are derived from the Mineral Kingdom; others are obtained from the Organized Kingdom."

This chapter treats of the following *alimentary principles:* 1. The aqueous; 2. the mucilaginous; 3. the saccharine; 4. the amylaceous; 5. the ligneous; 6. the pectinaceous; 7. the acidulous; 8. the alcoholic; 9. the oily; 10. the proteinaceous; 11. the gelatinous; 12. the saline.

These various subjects are all most happily treated, according to the most recent improvements in analytic chemistry, and also in practical and experimental physiology; and among the authors quoted, the name of our countryman, Dr. Beaumont, for many years of the United States Army, but now of St. Louis, frequently appears. These references relate to Dr. B.'s "*Experiments and Observations on the Gastric Juice, and the Physiology of Digestion*,"—experiments made upon the stomach of a Canadian, who had an artificial opening in the epigastrium leading to its cavity, the result of a gun-shot wound, treated by Surgeon B. himself.

This chapter abounds in the most important facts and conclusions, in reference to each of the twelve alimentary principles named above; and to give some idea of the general character of this part of the volume, we will here introduce a description of one of them:

"THE AMYLACEOUS ALIMENTARY PRINCIPLE.

(Farinaceous or Starchy Substances.)

"This principle is peculiar to plants, from which it is obtained under the various names of *Amylum*,* *Starch*, *Fecula*, or *Farinaceous Matter*. It is very generally distributed in the vegetable kingdom, existing in both cryptogamic and flowering (endogenous and exogenous) plants, and being found in thallus, roots, stems, tubercles, fruits, and seeds.

"The following table, gives an approximative idea of the quantity of starch contained in different parts of plants:

QUANTITY OF STARCH IN 100 PARTS OF THE FOLLOWING VEGETABLE ORGANS:

	Starch.	Authority.
1.—THALLUS.		
Iceland Moss	44·6†	Berzeelius.
2.—ROOTS.		
Janipha Mannihot or Tapioca plant (var. red)	13·5	DeCandolle.
Ditto (var. green)	11·5	Ditto.
Ipomæa Batatas	7·5	Ricord.
Ditto (var. red)	13·3	O. Henry.

* The Greeks called it ἄμυλον, (from *a* negative, and μύλος *a mill*), because it was not prepared by grinding in a mill. (See Pliny, *Hist. Nat.* lib. xviii. cap. 17. ed. Valpy.

† Besides 36·2 parts of amylaceous fibre.

3.—TUBERCLES.		
Potato (var. kidney)	9·1*	Einhof.
Ditto (var. red)	15·0†	Ditto.
Ditto (var. Shaw)	18·8‡	Vauquelin.
Ditto (var. Champion)	15·9‖	Ditto.
Ditto (var. Chair rouge)	12·2§	Ditto.
Ditto (var. L'Orpheline)	24·4¶	Ditto.
Ditto (var. Captain Hart)	15·	Skrimshire.
4.—RHIZOMES.		
Maranta arundinacea, or Arrow-root plant	12·5	De Candolle.
Ditto	26·0	Benzon.
Canna coccinea	12·5	De Candolle.
——— indica	3·3	Ditto.
Ginger	13.0	Ditto.
Ditto	19·75	Bucholz.
Turmeric	26·0	De Condolle.
Discorea sativa, or the Yam	12·5	Ditto.
Ditto	22·66	Süersen.
5.—PERICARPS.		
Artocarpus incisa, or Breadfruit	3·2	**De Candolle.
——— integrifolia, or Jak-fruit	6·2	Ditto.
6.—SEEDS.		
Barley-meal	67·18	Einhof.
Oatmeal	59·0	Vogel.
Wheat-flour	56·5 to 72	Vauquelin.
Wheat-bread	53·5	Vogel.
Rye-meal	61·07	Einhof.
Maize ††	80·92	Bizio.
Rice (*Piedmont*)	82·8	Braconnot.
Ditto (*Carolina*)	85·07	Ditto.
Peas	32·45	Einhof.
Garden Bean (*Vicia Faba*)	34·17	Ditto.
Kidney Bean (*Phaseolus Vulgaris*)	35·94	Ditto.

"The amylaceous substances are organized. Examined by a microscope, they are seen to consist of small grains, which are usually rounded, or elliptical, flask-shaped, or mullar-shaped, or polyhedral. The polyhedral form probably arises from the mutual compression of numerous grains in the same or neighboring cells. On some part of the surface of each grain is a circular spot, called the *hilum*; very rarely, two or even three of these spots are observed on the same grain. According to Raspail, the hilum is the spot where the starch-grain was adherent to the vegetable cell in which these grains are contained. The hilum usually cracks in a linear or stellate manner. Starch-grains have a laminated texture: that is, they consist of a series of concentric layers or membranes, the outermost of which is the thickest or firmest. To these layers is owing the appearance of concentric rings or rugæ which starch-grains present on their surface, and which are most evident in grains of Tous les Mois and of Potato Starch."

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* In addition to 8 8 parts of amylaceous fibre.

† Also 7·0 parts of amylaceous fibre.

‡ In addition to 5·1 parts of amylaceous fibre.

§ Besides 4 9 parts of amylaceous fibre.

‖ And 10·2 parts of amylaceous fibre.

¶ Also 6·2 parts of amylaceous fibre.

** *Physiologie Végetalé*, vol. i. See also some experiments on the quantity of starch in various plants by Dr. Clark, in the *Medical Facts and Observations*, vol vii 1797.

†† It will be seen from the above table that while kidney potatoes, from which starch is usually prepared, yield but 9 1 per cent. of starch, Maize or Indian corn, yields 80 92. Advantage has lately been taken of this fact, in the establishment of manufactories, in this country, for the production of starch from this grain.—L.

MICROSCOPIC APPEARANCE OF STARCH GRAINS.

(Drawn to one scale.)

Grains of Tous les Mois or Canna Starch.

Grains of Potato Starch.

a, Normal starch particle (Fritzsche).
b, Irregular ditto.
c, *d*, Particles each having tow hila.
e, *f*, *g*, Particles broken by pressure and water; the internal matter remains solid (Payen).

Grains of West-Indian Arrow-Root.

Grains of Sago Meal.

Entire Grains of Tapioca.

Grains of Tahiti Arrow-Root, or Otaheite Salep.

Grains of East Indian Arrow-Root.

Grains of Wheat Starch.

a, A particle seen edgeways.

Grains of Portland Arrow-Root.

"The organic principle of which starch-grains are composed is called *amidon* or *amylon*. This substance consists of carbon and water (or its elements.)

COMPOSITION OF STARCH.

	Carbon.	Water.	Authority.
Fine Wheat Starch - - -	37.5	62.5	Prout.
Ditto. dried at 212° - - -	42.8	57.2	
Ditto. highly dried at 350° -	44.0	56.0	
Arrow-root - - - -	36.4	63.6	
Ditto. dried at 212° - - -	42.8	57.2	
Ditto. highly dried at 212° -	44.4	55.6	

"The formula which agrees with Prout's third analysis of Arrow-root is $C^{12} + Aqua^{10}$.

"The starchy matter (called *Lichenin* or *Feculoid*) of Iceland Moss consists, according to Guerin-Varry, of $C^{10}\ H^{11}\ O^{10}$. If the analysis be correct, this variety of starch contains excess of hydrogen.

"To render amylaceous matter digestible, it requires to be cooked in order to break or split the grains;* for, of the different laminæ of which each grain consists, the outer ones are the most cohesive, and present the greatest resistance to the digestive power of the stomach, while the internal ones are the least so. Hence, farinaceous substances are boiled in milk or water,—or they are panified with gluten, by which the grains are completely broken up—or they are made into puddings and tarts.

"When cooked, it is usually regarded as a mild, slightly nutritious, easily digestible article of food. 'Directly or indirectly,' observes Dr. Prout,† 'it forms a constituent of the food of most of the higher animals, as well as of man. It differs, therefore, from sugar, in being a *necessary* article of food, without which animals could not exist; while sugar is not. Hence a much larger quantity of amylaceous matter than of sugar can be taken; and what is a still more decisive fact, the use of this larger quantity of amylaceous matter may be persisted in for an unlimited period, which, it appears, is not the case with a large portion of sugar.'

"By digestion, starch becomes converted into gum and sugar; the latter probably becomes absorbed. This conversion is effected, according to Leuchs, by the action of the saliva.‡

"The exterior laminæ of the starch-grain are thicker, more cohesive, and less readily digested, than the inner ones. Leeuwenhoek§ observed that the excrements of birds fed on the cereal grains contained a considerable quantity of these exterior laminæ, but without the interior matter; and from this he inferred that the latter only was the nutritive portion of starch.

"* 'Fecula,' says Raspail, (*Chim. Organique,*) 'is not actually nutritive to man until it has been boiled [or otherwise cooked.] The heat of the stomach is not sufficient to burst all the grains of the feculent mass which is subjected to the rapid action of this organ. The stomach of graminivorous animals and birds seems to possess, in this respect, a particular power; for they use feculent substances as food in a raw state. Nevertheless, recent experiments prove the advantage that results from boiling the potatoes and partially fermenting the farina which are given them for food. At all events, it is certain, that bruised grain is much more nutritive for them than that which is entire; for a large proportion of the latter passes through the intestines perfectly unaffected as when it was swallowed.'

"Bracounot (*Journ. de Chim. Méd.* t. iii. 2e Sér. p. 428–430) found unbroken starch-grains in the excrement of a slug, the temperature of this cold-blooded mollusk being insufficient to crack the grains. Unbroken grains, he states, are also found in the excrements of hot-blooded animals fed on raw potatoes. Hence, he adds, the potatoes employed for feeding cattle should be boiled; since, independently of the accidents which may arise from the use of them in the raw state, a considerable quantity of alimentary matter is lost by the employment of these tubercles in the unboiled state.

"† *On the Nature and Treatment of Stomach and Urinary Diseases*, p. 10. Lond. 1840.

"‡ Müller's *Physiology*, by Baly, vol. i. p. 548.

"§ Quoted by Guibourt, (*Hist. Abrég. des Drogues simples*, t. ii. p. 447. 3me ed.)

"According to Liebeg, (see *ante*, p. 16,) starch being a non-nitrogenized food,* is an element of respiration, and is incapable of transformation into blood or organized tissues. He, therefore, regards it as an element of respiration, and as contributing to the formation of fat, (see *ante*, p. 26.) 'Children fed upon arrow-root, salep, or indeed any kind of amylaceous food, which does not contain ingredients fitted for the formation of bones and muscles, become fat, and acquire much *embonpoint*; their limbs appear full, but they do not acquire strength, nor are their organs properly developed.'†

"The times required for the digestion of some amylaceous matters, are, according to Dr. Beaumont,‡ as follows:

DIGESTIBILITY OF AMYLACEOUS MATTER.

	Time required for Stomachal Digestion.
Sago, boiled, - - - - - - - -	1 hour.
Tapioca, boiled, - - - - - - -	2 hours.

"It is doubtful whether tapioca is uniformly more difficult of digestion than sago.

"Farinaceous food is, perhaps, the least irritating of all kinds of aliments. It is, therefore, well adapted for the use of persons affected with morbidly sensible conditions of the primæ viæ. It will sometimes remain on the stomach when every other kind of nutriment is immediately rejected. Being totally devoid of all stimulating properties, it is a useful and valuable article of food in febrile and inflammatory diseases."

Having thus presented a philosophical view of the *amylaceous* alimentary principle, our author proceeds to give a precise and complete account of the varieties of amylaceous matter in common use for dietetical purposes. These comprise *sago, tapioca, arrow-root, tous-les-mois, potato-starch, Tahiti arrow-root or Otaheite salep, East India arrow-root, Portland arrow-root, rice-starch, and lichenin* or *feculoid.*

We may add, that we have seen among the Florida Indians large quantities of arrow-root, consisting of a very white amylaceous powder, made by them from the *maranta arundinacea*, which is here found in the greatest abundance, with large heart-shaped tubers. This is wholly free from any coloring matter or unpleasant odor; but there are many other kinds of inferior quality obtained from various plants, and even from the roots of the low palmetto, this last being quite red, and not at all agreeable to the taste. This preparation, called by the Seminoles *koonté*, is one of their chief articles of subsistence; and we were present on an occasion when some troops discovered and destroyed a large quantity, (many bushels,) which had been secreted by the Indians. Before the late Indian hostilities, considerable quantities were manufactured by several enterprising whites on the eastern coast of the peninsula, for the purpose of commerce.

In our next number, we shall resume our notice of this very valuable work, of which, we trust, our readers will very generally avail themselves, seeing that the retail price is but a single dollar.

"* Jacquelain (*Ann. de Chim. et de Physique*, t. lxxiii. pp. 167–207) states, that both starch and its granules contain from 0·24 to 0·31 per cent. of nitrogen.

"† Liebig, *Chemistry in its Application to Agriculture and Physiology*, pp. 128–9, foot note, 2d ed. 1842. Very recently, Dumas (*Annals of Chemistry*, Nov. 11, 1842) has denied that animals have the power of forming fat; and he asserts that the fat of animals is derived immediately from the fatty substances contained in the food on which the animals feed.

"‡ *Experiments and Observations on the Gastric Juice and the Physiology of Digestion.* By W. Beaumont, M. D. Reprinted from the Plattsburg edition, with notes by Dr. Combe. Edinb. 1838.

ART. XIII.—*A Dictionary of Practical Surgery: comprehending all the most interesting Impovements, from the Earliest Times down to the Present Period; an Account of the Instruments and Remedies employed in Surgery: the Etymology and Signification of the Principal Terms; and numerous References to Ancient and Modern Works, forming a Catalogue of Surgical Literature, arranged according to Subjects.* By SAMUEL COOPER, Senior Surgeon to the University College Hospital; Professor of Surgery in the same College; Surgeon to the Queen's Bench, etc., etc., etc. From the seventh London edition, revised, corrected, and enlarged. With numerous Notes and Additions, embracing all the principal improvements and greater operations introduced and performed by American Surgeons, together with a Supplementary Index, in which the science of Surgery is brought down to the present period, including all the recent improvements in Europe and America. By DAVID MEREDITH REESE, A.M., M.D., etc. New York: Harper & Brothers. 1842. 8vo., pp. 1166.

IN the preface to the sixth London edition, the fact is mentioned that, in England, this Dictionary had obtained a larger share of patronage than has perhaps ever been conferred upon any other surgical work; for it had then already been several times republished in America, and also translated into the French, German, Italian, and Russian languages.

"In preparing this edition," says Mr. Cooper, "which is enriched with an account of all the latest improvements in surgery, I have conscientiously endeavored to deal fairly and impartially with every individual whose name I have had occasion to mention, or whose suggestions form subjects of consideration in the ensuing pages. My aim has been truth, wherever I could find her; and in every situation where any glimpse of her beautiful figure presented itself, I have ardently courted her, regardless of the name, school, or country on which she might deign to shed her glory. By steadily adhering to this principle; by zealously marking what the book of nature and the field of experience unfolded; by renouncing all obsequious submission to every other kind of authority; and by taking the liberty of sometimes thinking and judging for myself; I trust that the most likely plan has been adopted of maintaining the character of this book, and raising my own humble reputation."

In view, then, of the exalted reputation of this Dictionary, it were idle, on our part, to attempt a labored commendation; for, throughout the length and the breadth of this land, it has long maintained the character of a standard work, holding a place in almost every library, and being adopted as a text-book in many schools of medicine. Under the editorial supervision of the late distinguished Dr. Dorsey, of Philadelphia, it passed through four editions, which last was reprinted in New York, with an appendix by Mr. Wm. Anderson.

In the mean time, Mr. Cooper published the fourth and the fifth editions; and thus, by availing himself of the new and valuable discoveries in surgical knowledge which have of late years accumulated with a rapid pace, he gradually built up, by a proper condensation and arrangement of these materials, a noble superstructure of scientific surgery. There is one objection, however, that may be urged against these volumes, which is, that some of the articles consist of *patch-work;* that is, the author was content in successive editions merely to add whatever discoveries and improvements had meantime occurred, instead of re-writing these articles *de novo*, and thus making of them well-digested and congruous monographs.

It was at this period, 1830, that the Harpers published a stereotype

edition of this work, edited by Dr. Reese, who added perhaps some two hundred pages of matter, consisting mostly of American materials. Upon this point the American editor remarks:

"Within the last few years, our profession, and especially the department of Chirurgery, has been making steady and even rapid advances in almost every country. Many diseases formerly among the opprobria of our profession have yielded to the science and skill of modern surgeons. Besides the vast improvements made in the treatment of surgical diseases, operations have been performed with entire success for the relief of injuries, but a few years ago esteemed irremediable; and some of them of so bold and difficult a character, that to propose them would have been a hazard of reputation which but few could have then survived.

"Learning is not indigenous to any country; and although national pride sometimes prompts to exclusive pretensions, yet the history of surgery, so far as this is concerned, forbids such presumptuous arrogance. The question, 'Who hears of American surgeons?' is no longer tauntingly repeated; since the discoveries and operations of some of them have extorted a tribute of admiration from almost every country where this science is cultivated, and given to their names professional immortality. In this, as in the other departments of learning, we may be allowed to say, without the imputation of vanity, that our countrymen have shown to demonstration, that when the tree of science is transplanted across the Atlantic, it is capable of taking as firm a root as in its native soil."

We now come to the American edition before us, (1842) which consists of eleven hundred and sixty-six large octavo pages, the supplementary Appendix added by Dr. Reese making one hundred and seventy pages. This last embraces "all the valuable improvements of the seventh and latest edition of the author, published in 1838, together with all the recent improvements in Europe since that date, and a record of the meritorious operations performed by American surgeons in various parts of the United States; thus bringing the science down to the present time."

The rapid advancement of surgery, within recent years, cannot but be in itself a subject of high interest to our readers; but especially so is it, as regards the part taken in this field of noble emulation by the surgeons of America. We therefore give place with much pleasure to the following correspondence between Mr. Cooper and Dr. Reese:

"In the article 'Surgery,' in the former edition of this Dictionary," says Dr. Reese, "and which, from the necessity of the case, is still retained in the text, it will be seen that, actuated by a national feeling, which will be appreciated by every American, I complained of the omission of the just claims and sterling merits in this department to which the surgeons of the United States were entitled, and attempted, in my notes, to supply the author's lack of service. Mr. Cooper has responded in a manner so creditable to himself, and to the liberal profession of which he is a veteran, that in justice to him I here insert his response. In the preface to his last London edition, 1838, he says:

"'In particular, it affords me peculiar gratification to have had an opportunity, in this seventh edition, of bringing under the notice of British surgeons the meritorious transactions of their brethren in the United States, where the same zeal for the advancement of Surgery, and the same just estimate of its value to society, are exemplified as in the mother-country. In Operative Surgery, the surgeons of no nation have exceeded them in decision, coolness, enterprise, and boldness; and however doubtful I may individually be respecting the real good likely, on the whole, to result to mankind from certain extraordinary achievements with the scalpel, which, as will be seen in the course of this work, have been performed in America, I give the surgeons of the United States, as I do to many surgeons in my own country, France, and Germany, who are smitten with the love of similar proceedings, the credit of

being actuated by the zealous hope of being able, by such means, to extend the efficiency of Surgery to cases of the most desperate kind.

"'This edition will not only be the means of diffusing the knowledge of what has been done in operative and other parts of Surgery by European and American surgeons, but it will prove that, however right Dr. Reese may have been in complaining of my not having formerly done full justice to the surgeons of the United States, it was not from any desire on my part to keep their transactions concealed, but simply from the fact that I did not then possess the information that has since reached me of their praiseworthy exertions.'

"Under the article 'Jaw-bones, amputation of,' he thus speaks:

"'The operation of removing a considerable portion of the lower jaw-bone is stated by Dr. Reese to have been first performed by Dr. Valentine Mott. This claim I was not aware of at the time when the article *Bones, Excision of*, was delivered to the printer, nor have I, at the present moment, leisure to ascertain the point. 'Dr. Mott is not only the *first*,' says Dr. Reese, 'but the *only* surgeon who has amputated the bone successfully at the articulation, except (since) Dr. Cusack of Dublin.' (See *Amer. ed. of this Dict.*)

"'I am very glad to have had this opportunity of recording the claim of Dr. Valentine Mott to the merit of having first removed the lower jaw at the articulation. The achievements of this distinguished surgeon, to whom I had the gratification of being introduced when he lately visited University College Hospital, I shall always be as proud of noticing as if they were the performances of any British practitioner.'

"And appended to the article 'Surgery' I find the following frank and manly paragraph:

"'I regret that, in the last edition, due justice was not done to the meritorious surgeons of the United States of America. This happened, however, not from any want of desire on my part to pay the tribute of honor where it was deserved, but from my not being then in possession of the valuable information respecting the progress of Surgery in the United States, which I have since obtained from Dr. Reese's American edition of this Dictionary, and other sources. I most cordially join, then, in the observation that, in a history of this kind, mention ought to be made of 'the names of Drs. White, Dudley, Davidge, Dorsey, Shippen, Bard, Post, Mott, Gibson, Parrish, Barton, M'Clellan, Stevens, Warren, Smith, Jamieson, and a host of others, who have contributed by the pen and the knife to elevate this department of the profession: this will be admitted, unless the successful ligature of the subclavian, the common iliac, the internal iliac, and that of the innominata, the amputation of the hip-joint, and upper and lower jaw, the extirpation of the parotid gland, the exsection of the clavicle, and the cure of aneurism, by tying on the distal side of the tumor, be unworthy of record. Some of these operations,' continues Dr. Reese, 'had never been attempted in Europe till our surgeons had led the way; and by these and other splendid achievements in Operative Surgery, had demonstrated their practicability and success.' In adverting to such merit in the surgeons of the United States, I feel all that heartfelt pleasure which arises from the remembrance of their close connection with my native country by the ties of blood and language, and they may rest assured of my sincere esteem, and of my earnest wish to render full justice to them on every subject.'

"It is a source of gratification to me that my humble effort has been successful in acquainting our professional brethren in Europe with the real merits of my own countrymen, so many of whom have distinguished themselves by their exertions in behalf of science and humanity, and whose meritorious claims in surgery have never before been recognised or acknowledged. Mr. Cooper has, in this seventh edition of his work, incorporated all my numerous notes and additions on American Surgery, so that our national pretensions are now spread before the profession in Great Britain. A similar meed of justice has also been since awarded us in France; for, in the second edition of Velpeau's 'Nouveaux Elements de Médécine Operatoire,' the author has manifested a commendable spirit of liberality and justice to American surgery which does him honor.

"The following extract of a letter lately received from the venerable author of this Dictionary, addressed to the American editor of his work, will be gratifying to the profession, and its insertion here is due to Mr. Cooper.

"'*Woburn Place, Russell Square, London.*

"'I am glad to hear that you are about to undertake another American edition of the Dictionary of Practical Surgery, for you acquitted yourself so ably in the editorship of the former one, that not a doubt can be entertained about your very superior qualifications for the task. I know that numerous valuable observations and improvements in Surgery have been made in Europe and America subsequently to the publication of your first edition, and especially since the year 1830, when your notes were written. Perhaps in the last ten years, I may say with truth that Surgery has made greater progress than in any preceding space of time of the same length; hence there must be a necessity for much change in every general treatise on the subject, in order to adapt it to the present state of the science, and to let it give a correct explanation of the theory and practice most approved of in those parts of the world where our noble profession is cultivated with the greatest degree of success. These remarks are especially applicable to the Dictionary of Surgery, which embraces the whole range of the subject, and, perhaps, has a more extensive circulation than any other book devoted to it. Into your new edition you will be able to bring not only all the new matter brought into my last edition, but other observations and improvements made by the talented surgeons of the United States, and either not known to me, or not within my reach at the period when I was writing. Whenever I arrive at a new edition again, your testimonials of the contributions of your distinguished countrymen will not be overlooked, and every endeavor will be made to do them justice. Believe me that I shall be most happy to shake hands with you in London, and that I am most faithfully yours, SAMUEL COOPER.

"'*Professor Reese, New York.*'"

Professor Reese has performed his work well; and although but twelve years had transpired since the publication of the previous edition, the improvements exhibited in Surgery are neither few nor inconsiderable. There is, indeed, one department, namely, the speciality of Orthopœdic Surgery, which was but in a state of embryo, when the former edition was issued.

We deem it wholly unnecessary to say a word in recommendation of this compendium of surgical literature. But we will add, that to the surgeons of the army and navy, whose modes of life cut them off, in a great measure, from access to large libraries, this volume, seeing that it is a surgical library in itself—a true exemplification of the *multum in parvo*—must constitute an invaluable treasure of surgical knowledge.

ART. XIV.—*Pathological and Surgical Observations on the Diseases of the Joints.* By Sir BENJAMIN C. BRODIE, Bart., F.R.S., Sergeant-Surgeon to the King, Surgeon to St. George's Hospital, and author of Diseases of the Urinary Organs. Philadelphia: Lea & Blanchard. 1843. 8vo. pp. 216.

THIS edition is reprinted from the fourth London edition, with the author's alterations and additions; and this alone is no unimportant fact, as showing the general character of this treatise. The substance of this work consists of three papers, which appeared originally in the

volumes of the Medico-Chirurgical Transactions; but the whole has been since considerably modified, and much new matter has been added.

"The following pages," says Sir Benjamin, "contain a series of observations, which were begun several years ago, and which have been continued, not without considerable labor, up to the present period. They relate to a class of diseases which have strong claims on the attention of the surgeon; since they are of very frequent occurrence; are a source of serious anxiety to the patients; and, for the most part, if neglected, proceed to an unfavorable termination. There are other circumstances, also, which seem to render the morbid affections of the joints a fit subject of investigation. They have scarcely met with the attention which they merit from former pathologists. The terms, white swellings, scrofulous joints, &c., have been used without any well-defined meaning, and almost indiscriminately; so that the same name has been frequently applied to different diseases, and the same disease has been distinguished by different appellations. Confusion with respect to diagnosis always gives rise to a corresponding confusion with respect to the employment of remedies; and hence I was induced to hope, that, if it were possible to improve our pathological knowledge of the diseases to which I have alluded, this might lead, not indeed to the discovery of new methods of treatment, but to a more judicious and scientific application of those which are already known, and a consequent improvement of chirurgical practice.

"The joints, like the other animal organs, are not of a simple and uniform, but of a various and complicated structure. Although, in the advanced stages, the diseases to which they are liable extend to all the dissimilar parts of which they are composed, it is to be presumed that such is not the case in the beginning. We cannot doubt that here, as elsewhere, the morbid actions commence sometimes in one and sometimes in another texture; and that they differ in their nature, and are variously modified, and, of course, require to be differently treated, according to the mechanical organization and the vital properties of the part in which they originate."

A simple glance at the contents of this volume will serve to show its general character:

CHAP. I. On Inflammation of the Synovial Membranes of Joints.
" II. On Ulceration of the Synovial Membrane.
III. On Cases in which the Synovial Membrane has undergone a Morbid Change of Structure.
" IV. On the Ulceration of the Articular Cartilages.
" V. On a Scrofulous Disease of the Joints, having its Origin in the Cancellous Structure of the Bones.
" VI. On Caries of the Spine.
" VII. On Tumors and Loose Cartilages in the Cavities of the Joints.
" VIII. On Malignant Diseases of the Joints.
" IX. On some of the Diseases of the Joints.
" X. On Inflammation of the Bursæ Mucosæ.

In a survey of these subjects, the practical physician will at once perceive that here are presented numerous questions, which have often proved to him stumbling-blocks of no small magnitude; and to the student of medicine, it opens a vast field of inquiry, demanding much patient investigation for its satisfactory comprehension. To both, then, this litttle volume will be one of much service, inasmuch as we have here a condensed view of these complicated subjects, thoroughly investigated by the aid of the light afforded by modern pathological surgery.

PART THIRD.

Foreign Medical Intelligence.

ANATOMY AND PHYSIOLOGY.

1. *Early Marriages, so common in Oriental Countries, no proof of Early Puberty.*—In the No. of the Edinburgh Medical and Surgical Journal for July last, we find another paper on the Natural History of Puberty, by John Roberton, Surgeon, Manchester, he having previously published two papers on the same subject in the numbers of the same Journal for October, 1842, and July, 1842.

In the papers just mentioned, (he says,) I have expressed an opinion, that early marriage and early intercourse between the sexes, wherever found generally prevailing, are to be attributed not to any peculiar precocity, but to moral and political degradation, exhibited in ill laws and customs, the enslavement more or less of the women, ignorance of letters, and impure or debasing systems of religion. In proof of this opinion I expect to be able to show that in *England, at a period when some of the unfavorable circumstances just mentioned as yet lingered among us, early marriages were very common, if not in all ranks, certainly among the gentry; and that such marriages were likewise common very recently among both high and low in Ireland.*

Before entering on the evidence for this curious and hitherto unnoticed fact,—unnoticed I mean in connection with the present subject of inquiry—it may be well to state what is the age of marriage in some European countries, lying, like England, in the temperate zone, and therefore experiencing the same, or nearly the same climate, but where the mass of the people, from moral or political causes, and commonly both, are sunk in gross ignorance, or at best, with slow and doubtful progress, emerging from it.

It is to be recollected, that, though I have alluded to Hindostan, by way of example, as a land of early marriages, such marriages are found in the coldest climates,—found as commonly among the Esquimaux of North America and the tribes along the shores of Siberia, as on the burning plains of the Carnatic or in the islands of the Indian Ocean,—equally in the inclement Archipelago of Terra Del Fuego,* as among the tribes on the Orinoco,—among the Kirgis with their herds of Yaks, in the perpetual snows of Pamir at the fountain of the Oxus,† as in the verdant and sunny island of Ceylon. In every country, supposing the simple means of subsistence easily attainable, and even generally where it is otherwise, if the people are strangers to the Christian Scriptures, or to the civilization of the more favored European nations, which has its root in the Scriptures, *there* the female sex remains uneducated and unhonored, bought and sold, or bargained for in some form, like an article of merchandise; and

* "The Fuegians marry young."—Voyages of the Adventure and Beagle, vol. ii. p 182 Evidence as to the existence of early marriage among the Esquimaux and the Northern Asiatics will be found in my former papers.

† Journey to the Source of the Oxus in 1836-7-8, by Lieutenant Wood, p. 340. The Yak cannot live or does not thrive even in the winters of Cabul. It seems to require the region of perpetual snow, from under which it procures its food.

there it is found that generally the marriage union takes place at a premature age.*

Spain.—A recent writer has said, "The general immorality of females is to be attributed to the prevailing system of early marriages—marriages of policy or convenience—and to the low standard of morals, rather than to extraordinary depravity of natural disposition." "In Spain, women for the most part marry first and love afterward, and conjugal fidelity is consequently a rare virtue, especially as neither religion nor education interposes to check the fervid passions of a southern clime." "The cause of the low standard of sexual morals may be referred to the defective system of education, and the want of any proper religious principles to control the ebullition of passions." "I was amazed to discover the profound ignorance of the Andaluzas on the most common topics. The fact is, that in Spain woman is still suffering an Oriental degradation. She is still regarded in the light of a being created to contribute to the sensual gratification of man, rather than to be his companion, his friend, his counsellor."†

Sicily.—Frederick von Raumer calls "Ireland the English Sicily,"‡ intimating that the degraded condition of the people of Sicily is a disgrace to the Neapolitan government, as that of the Irish is a stain on the government of England. It is when speaking of the Sicilians that an interesting writer has said, "One must not enter these huts with English ideas; cleanliness must not be expected, but he will find enough to eat and drink, and the peasants satisfied with what they have. If any proof of what I have said were wanted, it might be found in the *universally* early marriages, and the numerous broods of naked, dirty, but not ill-fed children that are every where to be seen."§

Greece.—In Mr. Strong's valuable statistical work lately published, entitled "Greece as a Kingdom," when treating of the soil and the inhabitants, he alludes to the early union of the sexes, which he seems to attribute to natural precocity, and mentions an Athenian lady who was a grandmother at the age of 24.‖ Whittman in his Travels had given 15 years as about the age when the Greek women marry;¶ and those of the Ionian Islands, according to another writer, marry, some at 11, many at 12, and most before 16; all the matches being made by the parents.**

Russia.—European Russia may still perhaps be considered, as to the mass of its population, as lying beyond the boundary of civilized Europe; and here the age of marriage, according to the testimony of a number of writers, is allowed to be extremely early—to have been so, at all events, till within a very recent period. Thus Mr. Tooke writes, that the common sort enter into the nuptial state "as early as they can;" and elsewhere remarks that the women arrive at maturity at their 12th or 13th year.††

Another writer has said, that the lords of the soil in Russia, all take care to

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* Probably in all countries in an early stage of civilization, it has been the custom to buy and sell wives. By the laws of the Saxon Ethelbert, "if a free man lie with the wife of another free man, let him buy another wife for the injured party."—Strutt's Manners and Customs of the People of England, vol. i. p. 75. There were laws fixing the price for women of all ranks as wives.—Ibid. p. 76. And Michaelis, with reference to Germany, mentions, that, in the German Chronicles of the Middle Ages, "we find it stated that A. B. bought C. D., that is, married her."—Smith's Translation of Michaelis's Laws of Moses, vol. i. p. 450. This subject—the age and terms of the matrimonial contract in different countries, at different periods—has never, as yet, with anything like an adequate degree of care, been investigated, although there are few that better deserve the trouble.

† A Summer in Andalusia, vol ii. pp. 404, 5 and 6. London, 1839.

‡ Italy and the Italians, vol ii p 355.

§ Letters on Sicily, by William Irvine, M. D., p. 27. In the Spanish Island, Minorca, the Minorquins "are often betrothed to each other while children, and marry at fourteen."—Cleghorn on the Epidemic Diseases of Minorca, p. 54.

‖ Greece as a Kingdom, by F. Strong, Esq., 8vo.

¶ Travels in Turkey, &c., by W. Whittman, M. D., p. 25.

** Goodison on the Ionian Islands, p. 222.

†† Tooke's Russian Empire, vol. i. p. 375.

promote matrimony early.* According to Archdeacon Coxe, a boy of nine or ten is often married to a woman of more advanced age, she living as his father's concubine.† This latter is a curious trait which was noticed by Sir Dudley North, as we learn from his Letters during a residence in Archangel as far back as the reign of Charles II. "One of the inconveniences," says he, "that lie on those who dwell in this country, is, that the people are so given to nastiness, that nothing can be eaten out of their hands; you shall have perhaps four brothers and as many sisters, with their father, mother, husbands, and wives, all dwelling in one hot-house; (*wisbie* they call it;) they have nothing but a little straw strewed on the ground to lie upon." "In this country, the husband is the sole commander of the wife, who differs very little from his servant. Many will marry their sons to lusty baggages on purpose to gain able servants."‡

But our space will allow us to follow no farther in these interesting details relative to Russia. Suffice it to say, that—

By a recent ukase of the present Emperor Nicholas, (1831,) the priests are forbidden to solemnize marriage unless the man be 18 and the bride 16 years old: and this edict extends also to the Uniats and Protestants in the Empire.§

Mr. Roberton next proceeds to show that in England, as in Russia, a transition from marriage at a juvenile to marriage at a more mature age, must also have occurred. The average age of marriage in England, at the present period, appears from the following extract:

In the Report of the Registrar-General for the year ending 1839, a table of the ages in 4858 marriages has been published, and these not being selected instances, but belonging to districts varying in situation and character, and including every marriage in those districts, may be presumed to be a fair example of the ages at which marriages occur throughout the whole kingdom. According to this table there were under 15 years, none for either sex; of males 15, and under 20 years, there were 3 1-5 per cent.; and of females of the same ages about 14 per cent. of the whole number. The average age of marriage was for men, 27 years, and for women 25 years and a few months: a result which still leaves room both for regret and improvement.‖

Mr. Roberton shows that the English law appears to proceed on the assumption that early marriages were common:

Thus Littleton tells us that the wife shall be endowed out of her husband's lands and tenements, "whether she have issue by her husband or no, and of

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* Cooke's Travels through the Russian Empire, vol iv. pp. 70 and 71.

† Archdeacon Coxe's Travels in Poland, Russia, &c vol. i p. 439.

‡ Life of Sir Dudley North, in North's Lives, vol. ii. pp. 310-12.

§ Past and Present State of Russia, p. 306.

‖ Report of the Registrar-General for 1840, page 10, 8vo. From Senior's statement concerning a provision for the poor of foreign nations, 8vo. 1835, we find that in several European countries the laws against early and improvident marriages are, as appears to an Englishman, extremely strict. Thus in Bavaria the clergy are held responsible for the support of those poor persons they have married without leave from the authorities, besides being fined. In Berne, no pauper can marry without the consent of his parish; in Norway, no one can marry until he has satisfied the clergyman that he is able to maintain a family; in Mecklenburgh, owing to the conscription and other causes, men marry at from 25 to 30, and the women not much earlier. In Saxony a man liable to serve in the army may not marry under 21; in Wurtemberg no man is allowed to marry, unless permission have been especially obtained or purchased, under the age of 25. In Belgium the average age of marriage is for men 27, and 26 for women.

what age soever the wife be, so she be past the age of nine years at the time of the death of her husband, for she must be above nine years old at the time of the decease of her husband, otherwise she shall not be endowed."* On this passage Sir Edward Coke makes the following comment: "If the wife be past the age of nine years at the time of the death of her husband, she shall be endowed of what age soever her husband be, albeit he were but four years old. Quia junior non potest dotem promereri neque virum sustenere; nec obstabit mulieri petenti minor ætas viri."† "This we are told by that grave and reverend judge, without any remark of surprise or reprobation," says Mr. Christian, indignantly; and then he adds—"It is abundantly clear, both from our law and history, that formerly such early marriages were contracted as in the present times are neither attempted nor thought of."‡

In another instance, the law concerning rape, the existence of very early marriage is indirectly recognised thus:—by the statute of the 18th Elizabeth, which makes it a capital crime to abuse a consenting female child under the age of 10, an exception seems to be left for these marriages, by its being declared that *only the carnal and unlawful knowledge* of such woman-child is felony.§

Among the numerous instances of early marriages adduced from English history by Mr. Roberton, we will quote several:

It would seem that the dread of wardship and marriage sometimes operated with parents in marrying their children at a tender age, with a view to evade this oppressive law. Thus Maurice, fourth Lord Berkeley, was knighted at 7,‖ and was married at 8 years old to Elizabeth, daughter of Hugh, Lord Spencer, then but 8 years old, the reason being that early marriage prevented wardship, the payment of a large fine to the king, and assisted the party's own affairs with interest and powerful connections. This instance happened in the reign of Edward III. From a subsequent entry it is uncertain whether or not the juvenile couple were permitted to cohabit till the age of 16; since at the age of 14 the young husband, it appears, was sent to travel two years in Spain.¶

1603. James, first Duke of Hamilton, born 1603, married the daughter of the Earl of Denbigh, he 14, and the bride 7.** Burnet says, "after the years for consummating the intended marriage were over, he was forced to it not without great aversion, occasioned, partly, by the disproportion of their ages, and partly by some other secret consideration."

1680. Elizabeth, sole heiress of Joseline Percy, Duke of Northumberland, was married to Henry Cavendish, Earl of Ogle, who, however, died before he was of age to cohabit with her.††

Maurice, third Lord Berkeley, [Edward I.] was married at 8 years old, and a father before he was 14. The historian adds, "more than a dozen instances of paternity occur before that age."‡‡

Mr. Roberton thus cautiously concludes:

Perhaps the facts which have now been presented may be thought to warrant the following conclusions:

1st, That in England, Germany, and Protestant Europe in general, early marriage—that is, marriage about the age of puberty—would seem to be comparatively rare.

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* Coke's Littleton, lib. i. sect. 36 of Dover. † Ibid.

‡ Notes and additions to Blackstone, vol. ii. p. 132.

§ Christian's notes and additions to Blackstone, vol. ii. p. 132.

‖ If an infant tenant by knight-service was created a knight, the king was no longer entitled to the wardship of his person, nor to the value of his marriage.—Christian's Blackstone, vol. ii. p. 67.

¶ Berkeley Manuscripts, pp. 140-141.

** Burnet's Lives of the Hamiltons, folio, p. 406.

†† Collins, vol. p. 167.

‡‡ Berkeley Manuscripts, p. 115.

2d, That early marriage prevails among the uncivilized tribes, which wander within the Arctic Circle; as it likewise does in all cold countries, without any exception, the inhabitants of which are in a state of ignorance and moral degradation.

3d, That throughout European Russia, which is confessedly low in civilization, extremely premature marriage was the universal custom at no distant date.

4th, That, at the present day, in the most southerly countries of Europe, where the people are immersed in superstition and ignorance, marriage is early.

5th, That in Ireland, which, as to its moral condition, somewhat resembles the last mentioned countries, the marriage union takes place among the Roman Catholic population at an age probably almost as early.

6th, That in England about two centuries ago, when debasing political and social circumstances combined to favor the practice, early marriages were general, at all events in the upper ranks.

7th, That in all countries to which reference has been made, juvenile marriage is invariably seen as an attendant on ignorance and moral debasement, and this without reference to CLIMATE.

8th, That consequently it is perhaps allowable to infer that early marriage in oriental countries (which has generally, in the absence of all proof whatever, been ascribed to precocious puberty,) does solely depend on the same moral and political causes as elsewhere produce it; more especially as those very causes are well known to exist, at present, in an aggravated degree in all oriental and intertropical countries.

9th, That instead of ascribing early marriage, so prevalent in our Asiatic dominions, to precocious puberty, (in the absence of all evidence whatever of the fact,) it would be desirable to try moral and legislative remedies, with a view to the removal of a practice so injurious; a practice which seems to be incompatible with social improvement.

MEDICAL PATHOLOGY AND THERAPEUTICS.

2. *Involuntary Spermatic Discharges.*—In cases of involuntary pollutions, says M. Lallemand, there exists almost always, at the same time, irritation and debility, excessive sensibility, and want of tone in the spermatic organs. These two conditions may be observed to be present simultaneously, but in variable proportions; this precisely it is which disconcerts the practitioner, and causes despair in the patient; since antiphlogistics and tonics, emollients and excitants, repose and fatigue, produce good or bad effects in the same individual, according as the irritation or the debility predominates at the moment. Cauterization has the advantage of combatting at the same time these two orders of symptoms (debility and irritability); by destroying the surface of the engorged tissues, it alters their morbid sensibility; the resolution of this state produces a contraction of the parts, which gives them new energy; hence it is that cauterization in the majority of cases suffices to bring about a cure.—*Medical Times, June* 3, 1843.

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3. *Chloride of Lime or Soda a Preventive of Venereal Diseases.*—Many experiments have been recently performed in reference to this question; and these have invariably led to the belief that the chloride of lime or soda destroys the contagious properties of venereal pus, both as regards gonorrhœa and syphilis. Of all the agents tried, this seemed invariably to be the most powerful in destroying the principle of contagion; and, indeed, chemists have long ago arrived at the same conclusion, when the poisonous principle exists in a gaseous state, floating in the atmosphere. At a recent sitting of the Royal Academy of Medicine, at Paris, a number of experiments on this subject were communicated by

Dr. Coster, who also recommended that a solution of the chloride of lime should be supplied by Government to all the public women of Paris, and that a notice should be affixed in their chambers advising its use.

MATERIA MEDICA AND PHARMACY.

4. *Quinia.*—This therapeutic agent still continues, as noticed in our last Number, to be a subject of discussion in foreign journals, as regards its poisonous properties in large doses. In the July Number, we referred to an account of eighteen cases of acute articular rheumatism, which had been completely cured by very large doses of this medicine, by Dr. Briquet, one of the physicians to the Hôpital Cochin; and we now have before us, in the "*Journal de Médécine*," another report by the same physician, entitled, "*Nouvelles recherches sur le traitement du rhumatisme articulaire aigu par le sulfate de quinine à haute dose.*" This memoir, presented to the Academy of Medicine, gives the history of twenty-seven new cases of acute rheumatism, treated with large doses of quinine, in l'Hôpital Cochin.

The patients consisted of sixteen men and eleven women; and of these cases, five were very serious, eight somewhat less so, six were of a mean intensity, and eight were rather light attacks. The dose of the sulphate of quinine was graduated according to the intensity of the symptoms; the eight most seriously affected took, from the beginning, four grammes * (nearly sixty-two grains) in twenty-four hours, thirteen took three grammes, (about forty-six grains,) and the rest from twenty-five decigrammes to two grammes. This medicine was usually continued five days, the patient taking generally in all ten or twelve grammes, and sometimes as much as seventeen, administered in solution with sulphuric acid, and thus forming the bi-sulphate. The medicine thus prepared, according to M. Briquet, constitutes the only form that is always identical; and the dose he graduates, in all cases, in accordance with the intensity of the disease. If the fever was high, the quantity of quinine was correspondently augmented; but in chronic rheumatism, he limits himself to two grammes, as a general rule. The first favorable symptom in this treatment is a cessation of insomnia. He mentions one case in which the patient had not slept at all for six weeks; and yet, on the second day of this treatment, she slept as well as when in perfect health. The second favorable result is the diminution of the pain and swelling in the parts affected; but this diminution was more speedy in some of the cases detailed in his previous memoir, when considerably larger doses were used. Then, eight among twenty patients, were completely cured in forty-eight hours. Under the present treatment by diminished doses, the mean term of recovery he estimates at six days. Two patients died; but in them, the rheumatic symptoms, he says, were the least important part of their disorder. In one of them, who took but a comparatively small quantity of the sulphate of quinine, autopsy revealed foreign growths in the aorta and at the mitral valve, and two great effusions into the pleura. The other was a female, who had given birth to a child within five days of the time of entering the hospital. She had extremely acute pain with swelling in nearly all the moveable articulations, erysipelas of one arm, uniform and considerable tumefaction of one thigh, frequent nausea, pulse 130, etc. On the first day, she

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* A gramme is 15.434 Troy grains.

took six grammes (about ninety-three grains) of the sulphate of quinine; and on the second day, the amelioration in her symptoms exceeded all expectation. After this day, however, the administration of the quinine became wholly impracticable, in consequence of vomiting being produced by every dose; and the patient succombed in about two days. Dissection discovered pus in many articulations and in the sub-cutaneous cellular tissue of the arm, and also revealed gangrene of the internal surface of the uterus.

In all these cases, it is alleged, by M. Briquet, that no disagreeable incident, rigorously speaking, had supervened, as a consequence of the mammoth doses of quinine. In nearly all, there occurred a buzzing, whistling, and tingling in the ears, that was continual and fatiguing, but in no instance did it ever amount to deafness. Many experienced vertigo on rising, others felt fatigue or smarting in the eyes, or suffered the occular deception of small objects floating in the air; but, in no case, was amaurosis or marked dilatation of the pupil observed.

M. Briquet attaches much importance to the administration of the sulphate of quinine in complete solution; for, in this state, he considers it most favorable for absorption, the action of the salt being regular and rapid; but, in powder, this substance, which is almost insoluble, he says, acts but in proportion as it meets with acids capable of dissolving it. Besides, as the production of acids in the digestive tube is very variable, M. Briquet thinks that the sulphate of quinine, from want of a solvent, may accumulate in this viscus, and that a sudden and profuse secretion of acid may convert the whole at once into a state of activity; and to this cause, he ascribes the possibility of serious results, which in the case of its being administered in solution, would be noways likely to occur.

As regards the point of time when the administration of the quinine ought to be suspended, M. Briquet believes that we have a sufficient guide, on the one hand, in the phenomena of prostration and vertigo, and, on the other hand, in the increasing frequency of the pulse, or in its extreme relaxation and smallness, thus indicating a dangerous depression below its normal type.

In our last Number, several cases, in which quinine in large doses was administered, were noticed as having terminated fatally. Into the value of these same cases, the deaths having occurred prior to the reading of the memoir before us, M. Briquet proposes to inquire, with the view to determine whether they afford sufficient force to warrant our rejection of the use of sulphate of quinine in large doses.

We cannot follow our author in these details. Suffice it to say, that the fatal case, noticed in our previous Number as a victim to quininism, which occurred under the hands of M. Recamier, and in which dissection revealed the signs of a general and most intense meningitis, he combats successfully, at least so far as to show that the evidence in the affirmative is by no means satisfactory. He alleges that M. Bally has frequently given the sulphate of quinine in doses of four grammes (about 62 grains) in cases of arachnitis; that M. Deleus has done the same, and has recommended it, but in a smaller dose, in encephalitis; that his colleague, M. Blache and himself had given as large a dose to forty patients affected with *fièvre typhöide*, following a form of *méngo-encéphalite;* and that, in fine, there existed no fact to demonstrate the existence of inflammation of the encephalon occasioned by this therapeutic agent. Besides, he shows that the sudden supervention of meningitis or encephalitis in the course of acute rheumatism, leading speedily to death, though not common, yet is not of very rare occurrence.

M. Briquet notices several other cases, which have appeared in the medical journals, in illustration of the evil consequences of large doses of sulphate of quinine; but our space will not allow us to follow him in these details. He maintains that the medicine may be given with entire safety under the restrictions observed by himself. Thus, he prescribes the salt in a soluble form, and repeats the dose so frequently as to ensure the giving of a small quantity at a time; and in the event of an unfavorable result, when decidedly marked, he suspends instantly the use of the medicine.

These fatal cases he explains on the ground of mere coincidence or of idiosyncracy. He thinks them not unlike the instances in which a fatal phlebitis follows blood-letting—not unlike the supervention of an uncontrolable erysipelas upon the simple application of a few leeches—or the destruction, by gangrene, of the thoracic and abdominal parietes, as the result of a mere vesicating plaster.

We have thus condensed, within the compass here presented, M. Briquet's memoir of twelve pages, in which, perhaps, full justice may not be done to his views, in consequence of this severe compression.

Upon the whole, however, we are not satisfied that M. Briquet is authorized in maintaining the innocuousness of sulphate of quinine in the large doses given by him. According to the experiments of MM. Majendie and Malier, sulphate of quinine proved poisonous to dogs in doses of two grammes; and it was found by M. Giacomini that two and a half grammes poisoned rabbits. In reference to man, the question ought not to be, we think, how much he can take without being poisoned, but to determine in what doses the medicine can be most usefully administered. May he not derive as much advantage from the quantities usually prescribed, as from the mammoth dose of six grammes? At all events, let the practitioner bear in mind the direction given to Phæton by his father—"in medio tutissimus ibis."

OBSTETRICS AND DISEASES OF FEMALES.

5. *Cephalotomy.*—A dreadful degree of responsibility attaches to the accoucheur in every instance of perforation of the head. The operation can never be a matter of choice: it is one of imperious necessity, to which he is impelled, with whatever reluctance, by the strictest sense of professional duty. If the child be alive when the head is perforated, its life is certainly destroyed, and infanticide is committed; yet, for the reason just stated, viz., that the act is not a matter of choice, but of necessity to save the mother, it is a justifiable act, and ceases to be a criminal one. Should we even possess satisfactory proof that the child is dead in utero, as, for instance, under a case of simple, but lingering labor, with the funis below the head, devoid of pulsation; though no violence would be offered to the child by the perforation of the head, we ought to abstain from an unnecessary resort to it, even for the sake of appearances alone. But if, in such case, the labor should become protracted, rather than allow the mother to run any risk under the efforts of natural expulsion, I would not hesitate to lessen the head, especially if there existed the least relative disproportion.—*Ramsbotham's Practical Observations on Midwifery.*

MISCELLANEA.

6. *Necrology.*—Dr. HAHNEMANN and Mademoiselle LE NORMAND.—The following notice of the decease of these two personages, is given by the

European correspondent of the National Intelligencer, (Mr. Walsh,) in a letter dated at Paris, on the 6th of July:

The most remarkable name on our obituary list is Dr. HAHNEMANN, the Great in Homœopathy, whose system has occasioned the emission of as many tracts, if not books, as any other in the profession most fruitful of systems, and has made considerable progress in both hemispheres, in spite or by reason of extensive and vehement opposition. He died here last Sunday, nearly ninety-three years of age. Whether he ever needed or practised for himself his main theory, I am not informed. I have seen at his door a throng of fashionable vehicles, which indicated his extraordinary vogue; and some of his patients relate that his French wife, (the second,) who was born forty or more years after him, was as frequently and sanguinely consulted as the veteran oracle himself. You will find a brief notice of his career in my roll of extracts. He must have amassed a large fortune. Next in note is the loss of the fortune-teller, Mademoiselle LE NORMAND, whose fame equalled that of any of her numerous profession of any era. She had predicted that she would reach the age of one hundred, but she went a little only beyond four score. This circumstance impairs her posthumous glory. While the humble pretenders to the same powers, the *poor* witches and sorcerers, in town and country, were objects of police vigilance and pursuit, and of judicial reproof and sentence, the high priestess of the Rue de Tournon enjoyed, not impunity alone, but profound deference from all quarters; her door was besieged by all classes; her fees were graduated from one hundred and fifty francs to ten; her imposture flourished half a century: her funeral honors, civil and religious, rivalled those of a pious duchess; it is probable that she died as rich as HAHNEMANN; her habits were parsimonious in the ratio of her gains. The opportunities of this woman for insight into human nature were without example. During the Revolution, the chiefs of the conflicting and the successive parties, and numbers of the victims of the several dominations, applied to her in regard to their own destinies or those of the objects of their jealousies and animosities; her celebrity was confirmed and enlarged after the downfall of Napoleon, from the common belief that she had predicted to him and Josephine, exactly, their respective fates, before they were united. It is certain that both seriously communed with her omniscient muse at different epochs after their elevation. The newspapers now tell of her coarse dishabille; her dirty cards and fingers; her pot boiling near her velveted arm-chair! the closing of her eyes as she revolved her propheti: tale; her race of cats; her library of black-letter volumes suited to her pretensions; her management in making herself acquainted with the personal history and peculiar characters of her probable visiters or the eminent individuals whom she wished to attract. It would seem that Mademoiselle was an exceedingly shrewd observer; could detect much from face and deportment; paltered in a double sense with the utmost skill; and turned fully to account the curiosity, credulity, and notoriety which she contrived to perpetuate.

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7. *A new Meteorological Instrument.*—A letter from Dochefort says: "We have lately had here a trial of a new instrument intended to show the probable courses of the winds. It consists of a thin piece of wood, three or four inches long, freely balanced, as the needle of a mariner's compass, on a steel pivot, by means of an agate inserted in the wood. At one of the extremities, about a third of the length, there is made a slit, in which are placed three or four magnets, about half an inch from each other. They are formed of bits of flattened watch-spring, from one to three inches in length. They are fixed perpendicularly to the horizon, and therefore free from all polarity. They all have their south pole above the bit of wood, and their north pole below it. The magnets act exactly as the directing finger of a weathercock, and show the direction of the wind The instrument may furnish interesting instructions with respect to the connection between magnetism and electricity, on the probability that the variations of the winds are due to electric currents. What renders it of great importance is the fact that these indications take place a quarter of an hour, and sometimes even half an hour, before the changes which occur in the winds, as those of the barometor do in the variations of the weather."

2.

American Medical Intelligence.

Extraordinary Case, in which the arm was torn off at the Shoulder-joint, by machinery, communicated to Prof. Willard Parker, by Jas. S. Cooper, M. D., *of British Guiana, South America.*

I was called to a neighboring plantation to see Daniel, aged about 7 years, son of one of the laborers. On arriving, I found a case of a very serious nature. The boy, while playing about the sugar-mill of the estate, had been caught in some of the machinery, and his left arm was torn off, bringing with it about two-thirds of the scapula. The deltoid muscle was carried away entire, and the trapezius was torn from its attachment to the clavicle, the naked end of which bone was protruding through the wound. Notwithstanding the very large amount of surface exposed, there was not the slightest hemorrhage, although reaction had fairly taken place.

With the assistance of Dr. Walker, the medical attendant of the estate, I proceeded to dissect out the remainder of the scapula, (the inferior and posterior portion.) A little bleeding ensued from the scapular arteries, but it soon ceased on pressure being made. Then, with a small saw, I removed the external third of the clavicle. As there was no necessity for tying a single vessel during the whole operation, the wound was now closed with sutures and adhesive straps; and the dressing was finished, by applying a compress and roller around the body. The patient bore the operation well, and soon after fell asleep.

Dec. 16. Considerable febrile action—pulse 120—tongue furred—wound rather painful. Ordered a slight purgative and left him.

20th. Every thing has gone on well up to this day; the wound was dressed; about half of it had united by the first intention, and the remainder is suppurating kindly. There is no fever; and the patient is every way comfortable, sitting up in bed, he having taken a full meal. The sutures were removed; and from this time onward he recovered rapidly.

Liquor of Hydriodate of Arsenic and Mercury, in Cutaneous and Uterine Affections. By Isaac E. Taylor, M. D., of New York.—This new chemical combination was first recommended to the profession by M. Donovan, in the Dublin Medical Journal. Having prescribed this preparation in a number of cases during the previous eighteen months, Dr. Taylor presents a detail of them in the April number of the American Journal of the Medical Sciences. He is decidedly of opinion that it produces a more marked effect than the various remedies usually resorted to, in those ir ractable forms of disease, Lupus, Rupia, Psoriasis, Secondary Venereal, etc.

Case I.—*Lupus exedens of the Nose.*—Diretta Dridwhotten, aged 74, born in Germany, and exceedingly fleshy. When first seen had blackish incrustations around the left ala, and on the septum nasi, a portion of the ala having

been removed by ulceration, and causing by its contraction the nose to be drawn to one side. A string of tubercles, the size of buck-shot, extended from the external canthus to the internal, and from the internal up the nose to the forehead. The lower eyelid was everted to its full extent, exposing the conjunctiva palpebralis, and producing an unpleasant deformity to look upon. Several of these tubercles were ulcerated, and had brown crusts upon them. The disease commenced twenty years ago on the left angle of the nose, which was accidentally struck by a whip, and shortly ulcerated. This was after a time healed by a French physician, with an external application; it, however, broke out again, and has since gradually progressed, till it has reached this extent. Her general health good. Various remedies have been tried in her case, but without mitigating it in the least. After the bowels were regulated, and advice given as to her diet, she was placed upon the solution, five drops three times a day, with a table spoonful of water. She continued taking the 'liquor' till October, when it was applied locally to the part, and after a short time it was perfectly healed, the dark and black incrustations were entirely removed, and a clear shining surface exposed, the unpleasant fœtor and discharge ceased. The tubercles around the lower eye-lid were reduced even with the skin, except a very large one at the external canthus; the lid has recovered nearly its natural position, and the conjunctiva saved from being exposed to the action of the air. After a month it commenced its work again on the nose, but was a second time arrested, and to this date has not returned, but presents a surface healed through its whole extent in the nose. The only tubercle at present remaining is the one at the external canthus of the eye that has a crust upon it.

Passing over the remaining cases detailed by Dr. Taylor, we come to his "Remarks," in which he cautiously and justly observes:

"Whatever doubt may exist as to the exact nature of these cases, the length of time some of them have been affected, and the benefit they have derived from the use of the remedy, must go far to urge its trial in the chronic affections of the skin."

In addition to the evidence here presented in favor of the "*liquor hydriodatis arsenici et hydrargyri*" in certain chronic cutaneous affections, we are enabled to lay before our readers the further experience of Dr. Taylor, as presented in the following communication:

New York, August 20, 1843.

Mr. Editor: Since the article from which the preceding extracts have been taken was published in the April number of the American Journal of Medical Sciences, several cases of Lupus, with various other eruptive diseases, have come under my notice. The total number of lupus cases (exedens and non-exedens) which have fallen under my observation during the last fifteen months, has been twenty-two; eighteen in my own practice, and four in that of other gentlemen. The efficacy of the "liquor" has been more particularly observed in Lupus owing to its obstinacy in yielding to any constitutional remedies, and the exceedingly important benefit accruing from its use; yet of infinite and decided advantage in the more intractable form of the other eruptive diseases. As respects Lupus, I would here remark that there is a feature in its diagnosis which has escaped the attention of all the authors on the subject, which is, its predilection for the left side, whether of the exedens or non-exedens, or vorax form; whether occurring on the cheek, the arm, or the body, the left side has almost invariably been affected, only two cases out of the twenty-two exhibiting it on the right side. A second feature worthy of note, so far as my experience has gone, is that females are more especially subject to it, not one of the cases I have seen being in a male; the proportion being much greater than that of Royer's, nor has it obtained, agreeably to Royer, in scrofulous patients, or those predisposed to scrofula; nor in conformity to the opinion of Plumbe, that the cachectic system was always manifest in the cases he saw; on the contrary, fully two-thirds the patients under my charge were

of healthy appearance and constitution, the secreting functions being free, and the chylopoectic viscera not disturbed, and in several cases it was observed in its incipient state in all its forms; and as it is seldom that it comes under the eye of the pathologist, at its commencement, it becomes difficult to determine whether it originates in unhealthy inflammation, or always with a tubercular elevation of the cutis; and, as various opinions prevail on this point, I am induced to join in the opinion of Biett, that tubercles are not the elementary lesions in every case of lupus, but that it is attended from the commencement with simple erythema.

From the number of cases stated, it will be observed that what was considered a rare disease, and of great rebellion, has become more frequent, and not only can be ameliorated in its extensive ravages, but frequently cured for a long time, as some of the cases have been seen, and it had not returned in them. This frequency might very justly give rise to the question whether these were all cases of lupus? or whether some of them were not tubercular syphilis, a disease they are more nearly allied to than any other, and which in some suspicious cases, (where only the tubercles are evolved) it is exceedingly difficult to determine; but the well-marked characters so frequently noticed in the secondary disease, militates greatly against a mistaken diagnosis.

Respecting the non-exedens form, the treatment with the Donavan's liquor has proved of no benefit, nor has it answered when applied locally, nor has any treatment, whether constitutional or local, been of benefit, but when locally applied had a tendency to aggravate it. In one case, much benefit was derived from acetic acid applied locally; still, in others it failed. The smallness of the dose has not been changed, but in one instance, when it was raised to ten drops. Ptyalism has not been observed in any other cases but those reported, when it has been continued for over six months, nor has any affection of the bowels exhibited itself under its use; and it affords me pleasure to add my further experience respecting its value in the eruptive diseases in all their chronic forms, particularly in that of lupus, so intractable, destructive, and formidable.

ISAAC E. TAYLOR.

DOES SEA-AIR, *per se*, ARREST THE CATAMENIA?

MR. EDITOR: In the first Number of your valuable addition to our medical periodical literature, I noticed a paragraph from the "American Journal of the Medical Sciences, headed "Arrestation of the Catamenia by the Sea-Air." My observations and experience coincide with the writer, that fully two-thirds of the Irish emigrants suffer from suspension of the menstrual discharge, dating from the time they enter on board ship; but I have not been led to ascribe this functional derangement of the uterus to the influence of the sea-air. I think, if we examine the circumstances under which the majority of these poor, but warm-hearted, daughters of Erin, are induced to expatriate themselves for their own and their country's good, and if we take, at the same time, the observations we make as the ground for our reasoning, we shall find no difficulty, on well-known physiological laws, in accounting for the suspension of the menstrual flux. We shall accelerate the advancement of medical science much better by submitting medical phenomena to a rigid analysis, in the hope of discovering the cause and tracing the effect, than in catering after the marvellous and wonderful. A greater evil cannot be perpetrated on medical science, than the too hasty jumping to a conclusion; that is, the placing as the cause of a phenomenon what is only an accidental concomitant, and one which has no influence whatever in its production.

The influence of the passions, either of excitement or depression, is familiar to us in their effect upon the secretions; and no part of the animal economy is more alive to these impressions than the generative

organs of the female. I have found, on making inquiry of those who have applied to me for medical assistance, that the majority of them have crossed the broad Atlantic unattended by either a friend or relative, being induced to commit their fortunes to this adventure from flattering representations held out by those who had previously immigrated here. Now, connect this loneliness with the discomforts, ennui, and miseries of a long sea-voyage, and contrast it with their previous habits,—many of them having never before left the place of their birth the distance of ten miles. Again, imagine the heterogeneous admixture of human beings by whom they are surrounded,—persons who would be the last in the world to attempt to calm the anxiety of these poor girls, but, at the same time, the most ready to obtain amusement at the expense of their fears. Then add to this, the disturbance of the cerebral faculties by sea-sickness, particularly the constant vertigo maintained by the pitching and rolling of the ship. Viewing the cases of these girls in this light, we bring to our aid what we witness daily in practice, viz., the effect of impressions made upon the brain, in powerfully influencing vascular action and organic function; and hence we can experience no difficulty in accounting for a train of sympathies being set up, which must interfere with the healthy functions of so sensitive an organ as the uterus.

Although a suspension of the menstrual discharge has been the prominent symptom introduced to my notice in all the cases brought before me, yet I have invariably found it combined with other functional derangement. The digestive apparatus is invariably implicated in connection with a great degree of cerebral disturbance, as well as nostalgia, which is always a prominent feature.

As respects the treatment, I have not met with the disappointment of Dr. Taylor; and I have not consequently been induced to leave it in the hands of time. Baglivi speaks of the conversations of physicians as having great influence upon the health of their patients—a principle which, if not better understood, is certainly more profitably employed by empirics than by the regular practitioner. A few words of encouragement, coming from the physician, will, in the cases now under consideration, be of as much real service as the most appropriate prescription. I generally commence the treatment with a mercurial cathartic, ordering an aloetic purgative, combined with some of the fœtid gums, to be taken every night, so as to keep up a slight impression upon the alimentary canal. At the same time, I direct an infusion of columbo to be taken during the day, and recommend the use of the pediluvium or the hip-bath. Under this treatment I generally find, in the course of a month or six weeks, and frequently sooner, my patients restored to health, with a return of that secretion, the regularity of which depends upon the degree of happiness enjoyed by a large proportion of the human species.

J. B. Griffin, M. D.

The Medical Schools of the City of New York.—We have received the annual announcement of Lectures of both these flourishing Institutions. In the College of Physicians and Surgeons, the Medical Class of last session numbered 120, and the catalogue of the Medical Department of the University of New York, gives a total of 271. In the former, the Trustees announce the appointment, by the Regents of the University, of Alexander H. Stevens, M. D., as President of the College, in place of John Augustine Smith, M. D., resigned; while the professorship of

Physiology, heretofore held by the late President, has been consolidated with that of Anatomy.

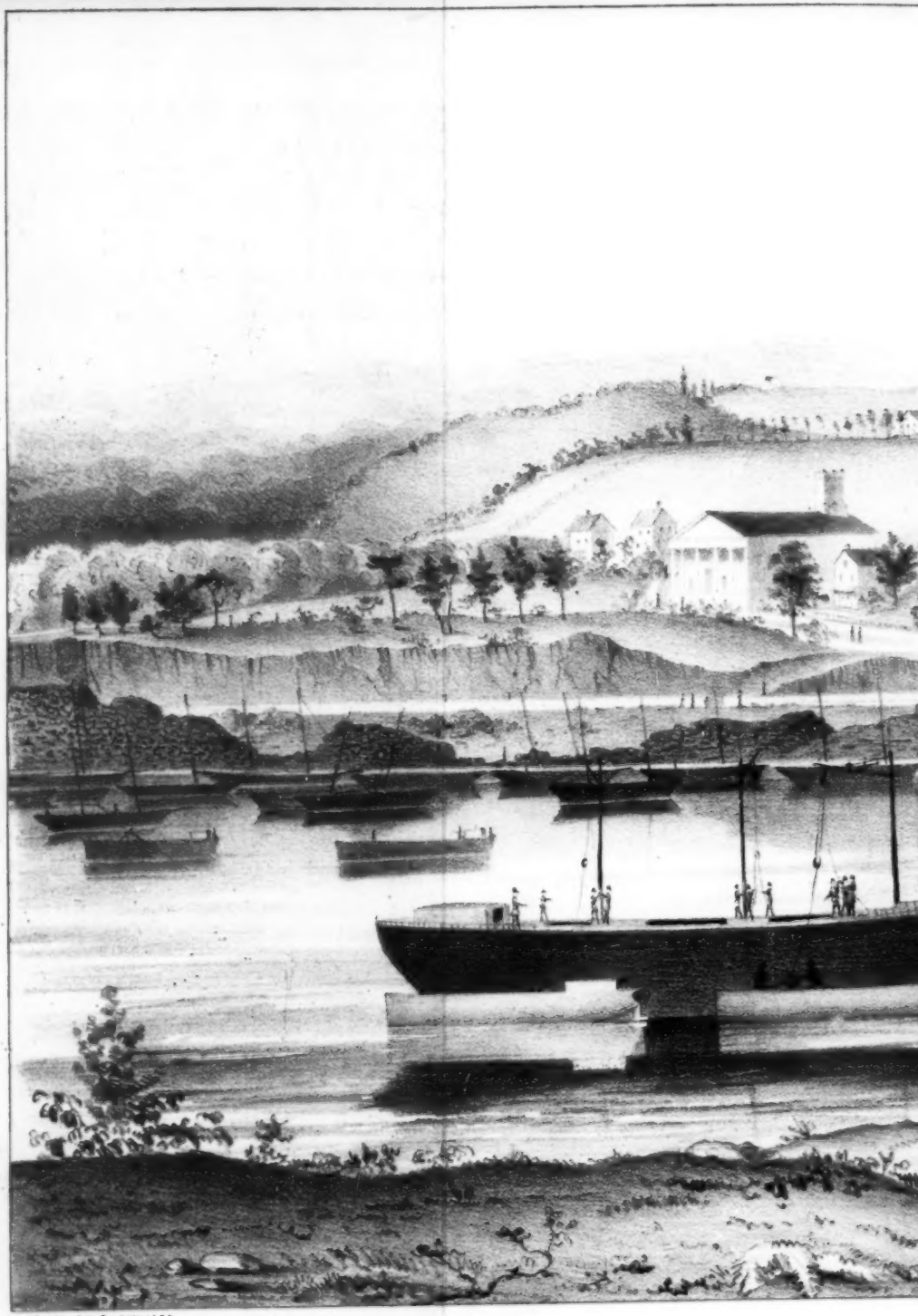
It is scarcely necessary to add, that both these Institutions possess the most ample arrangements for giving a full and thorough course of instruction, both theoretical and practical. The experience of the few last years has clearly demonstrated that here, in the American Metropolis, numbering its 400,000 souls, the cultivation of medical science must advance. In its local advantages, consisting of Hospitals, Dispensaries, Infirmaries, and private charities, with the *materiel* for anatomical pursuit both ample and cheap,—in a word, with all the facilities for a complete course of medical instruction, the best interests of the pupil cannot fail to be subserved. Besides, good board can be obtained as moderately here as in any other locality of a medical school. It is thus seen that the city of New York embodies all the elements requisite for the establishment of great medical institutions; and, judging from the experience of the last two sessions, the opinion that there will be, next winter, 500 medical students in this city, is warranted. In our previous Number, we pointed out the advantages offered to the student, by the New York Hospital School of Medicine.

Medical School of Georgia, at Augusta.—We have received the annual announcement of this College, which seems to be in a very flourishing condition. The class in attendance last year greatly exceeded in number that of any preceding year, it having numbered 128, of whom thirty-eight had conferred upon them the degree of Doctor of Medicine.

Castleton Medical College.—We have also to acknowledge the receipt of the annual announcement of this school, which seems not less flourishing than those just noticed. The class of the Spring session of the current year numbered 105, while the graduates *in course* were twenty.

Yellow Fever at New Orleans.—The appearance of this baneful disorder is again officially announced in this city; but, notwithstanding its annual visitation in this locality almost with the certainty of the varying seasons, New Orleans may be justly regarded as a healthy situation during nine months of the year. Situated on a mighty river's bank, formed of the alluvion of its own current, Yellow Fever is here invariably regarded as an endemic—a disease of season and locality. When the thermometer indicates summer heat, every one of its citizens looks out for this unwelcome visitor; and, on the other hand, when the same scale indicates the decreasing temperature of approaching winter, it is known, with still greater certainty, that the enemy must depart. No one here supposes it, for a moment, to be a *contagious* disease—a conclusion which the experience of almost every year exemplifies. Thus, although vessels laden with fugitives from the fell destroyer, ascend, for example, the Mississippi, by hundreds at this season; yet the disease, notwithstanding the fatal *black vomit* appears on the decks as they pass along, is never manifested among fellow-passengers from uninfected regions; nor is it, under like circumstances, ever communicated to the inhabitants of the district to which they may fly. Here, one attack, as a general rule, secures a future exemption from the disease, which is now admitted, with scarce an exception, to be *sui generis* in its character.

This disease, that is, a case or two, has made its appearance, it is said, within a few days, at the Quarantine Hospital of our city, on board a schooner from Point Petre, Guadaloupe, and 16 days from St. Martin's, laden with a cargo of salt.



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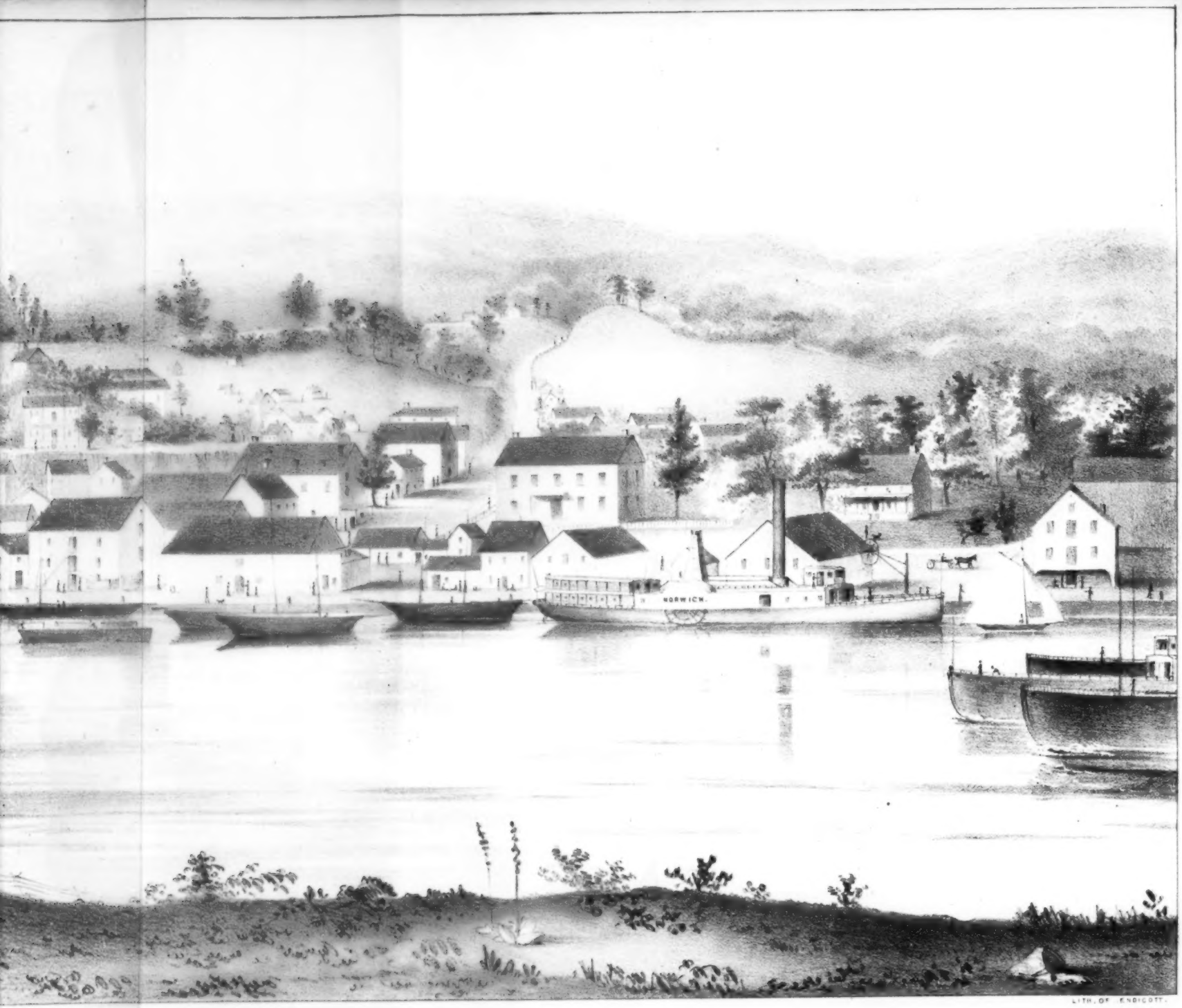
RONDOUT, NEW YORK.



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Art. IX.—On the Preparations of the Indian Hemp, or Gunjah, (Cannabis Indica:) their Effects on the Animal System in Health, and their Utility in the Treatment of Tetanus and other Convulsive diseases. By W. B.O'Shaughnessy, M. D., Bengal Army, late Professor of Chemistry and Materia Medica in the Medical College of Calcutta. London, 1843.—8 vo. pp. 38. 390

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☞ All letters in regard to the *business* department of the Journal, and all remittances of money, should be addressed *exclusively* to the publishers, Messrs. J. & H. G. Langley; but Books for Review and Communications designed for publication, should be directed, *free of expense*, to Samuel Forry, M. D., Editor of the New York Journal of Medicine, care of Messrs. J. H. G. Langley. Persons at a distance may direct parcels, paid as above, under cover of Barrington & Haswell, Philadelphia, W. D. Ticknor, Boston, and Wiley & Putnam, London.

Postmasters, it will be borne in mind, are authorized by law to frank letters containing money for the subscription of periodicals.

*** For Prospectus, see fourth page of the cover.

TO READERS, CORRESPONDENTS, ETC.

Can a Medical Journal be sustained in New York?—This is a question not unfrequently asked, and we believe very generally answered in the negative. As we have now the experience of issuing the third number of this Journal, constituting its first volume, we may be permitted to say a word upon this point.

With the publication of the second number, this Journal became *permanently* established, so far as this end can be secured by a list of subscribers; and since then, the Medical Bureau of the Army at Washington has ordered a sufficient number of copies to supply the entire medical staff. So successful has been the short career of this Journal, that our substantial and enterprising, but at the same time prudent, publishers, have felt themselves warranted in printing 1250 copies of this number. Moreover, it has been found necessary to *reprint* the first number.

Let us be understood to say all this in a proper spirit of humility; and as an evidence of our prosperity, the January number, commencing Vol. II, will appear in a new and improved dress, so far as the typographical appearance is concerned.

The Journal will be hereafter characterized by a new feature—the introduction of meteorological observations upon an improved and extended mode of investigation. This will include the barometer, the thermometer attached and the thermometer detached, the pluviometer, Daniell's hygrometer, the wet bulb, and observations upon the clouds, the clearness of the sky, and the force and direction of the winds. These observations will consist of those taken at Fort Columbus, in the harbor of New York, under the direction of the Medical Bureau of the Army. Through the kindness of the Surgeon General, we have been already favored with the observations of the last two months, but the paper came too late for insertion in the present number.

Contributions have been received from Drs. Buel, Goldsmith, Quackenbush, and McCready. Also from C. H. S., whom we would inform that no anonymous communication is admissible.

The following works have been received:

Elements of Chemistry, including the applications of the Science in the Arts, with numerous illustrations. By Thomas Graham, F. R. S., L. E. & D., Professor of Chemistry in University College, London, etc. With notes and additions by Robert Bridges, M. D., Professor, etc. Philadelphia: Lea & Blanchard, 1843. (From the Publishers)

Principles of Human Physiology, with their chief applications to Pathology. Hygiene, and Forensic Medicine. Especially designed for the use of students, With over 100 illustrations. By William B. Carpenter, M. D., etc. First American edition, with notes and additions by Meredith Clymer, M. D., etc. Philadelphia: Lea & Blanchard, 1843. (From the Publishers.)

A Classical Dictionary: containing an account of the principal proper names mentioned in ancient authors, and intended to elucidate all the important points connected with the Geography, History, Biography, Mythology, and Fine arts of the Greeks and Romans: together with an account of coins, weights, and measures, with tabular values of the same. By Charles Anthon LL D., Jay Professor of the Greek and Latin Languages in Columbia College, etc New York: Harper & Brothers, 1841. (From the Publishers)

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Our limited space compels us to postpone until the next number, the acknowledgement of some of the books sent to us for review; such as Churchill's Midwifery, Braithwaite's Retrospect, Raciborski's Auscultation, Elliotson's Practice of Medicine, Curling on the Diseases of the Testis, etc., Walshe on Cancer, Aran on the Diseases of the Heart and Great Vessels, Andral on Diseases of the Chest, Stewart's Hospitals and Surgeons of Paris, Kennedy's Obstetrical Auscultation, with various Introductory Lectures, and Journals in exchange.